MARCH 13, 1961

PAPER TRADE JOURNAL

Techniques and Equipment for Pin Pointing Troubles at the Wet End

Gaining Optical Properties With New Type of Fine Silica Pigment

C-Z's Chip Handling Operation At West Linn Is One of a Kind

Interview with PViC Resin's Maker Reveals Its Startling Properties

Contents of the Week, pages 4-5

CREATIVE MARKETING

- SIDE-RUN TONNAGE
- SUB-STANDARD LOTS

Balanced coordination . . . the secret of creative marketing . . . finds realization at Roosevelt through—(1) the capacity to store all kinds of paper in immense quantities; (2) the equipment to convert quickly to the needs of domestic and foreign markets; (3) unexcelled transportation facilities; and (4) a network of strategic sales offices, including main branches in Chicago and Atlanta. All these factors, plus imagination and enthusiasm, make Roosevelt the preferred job-lot outlet for America's leading paper mills.

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*Idea submitted by Norbert Gossens, Kimberly-Clark Corp., Neenah, Wisconsin
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Falls in Glacier National Park, Montana

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"Reminds me that HAMILTON Felts provide a steady, profitable flow of stock!"

"Because Hamilton Felts always stand up well under the steady, unrelenting flow of stock, and the constant pressures of making paper and box board, they give you long, trouble-free service and consistent, high quality performance. This results in less down time for paper makers and better operational profits.

"So if fast, copious water removal, long lasting, usable felts, and the profit accruing from operational savings and increased tonnage are what you want, why not start using us soon as one source of your felt supply? Just discuss your problems with your Hamilton Felts Service Salesman. If one of our 300 modern, technically proven styles won't solve *your* needs we'll be happy to design a Hamilton Felt that will."

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There is only one way to assure the roll qualities that your printing, publishing and converting customers are asking for. They want paper that stays *alive*, not stretched out *dead* in the roll. They want maximum yield from every roll through longer, faster, trouble-free runs.

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Backed by the most comprehensive line of unwinds, slitters, winders, tension controls, brakes and accessory roll production equipment in the industry, Cameron specialists offer you a unique *test-run* service. In the Cameron Research & Development Service in Dover, N. J., test-runs are being made on all types of papers and other web materials, on integrated pilot systems which simulate actual job conditions.

Here you can see before you buy—either an improvement element, such as a new unwind brake and tension system, or a complete, integrated roll production system, engineered to give you The New Roll. Let's plan *your* test-runs. Write for details.

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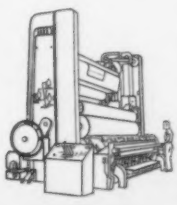

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PAPER TRADE JOURNAL

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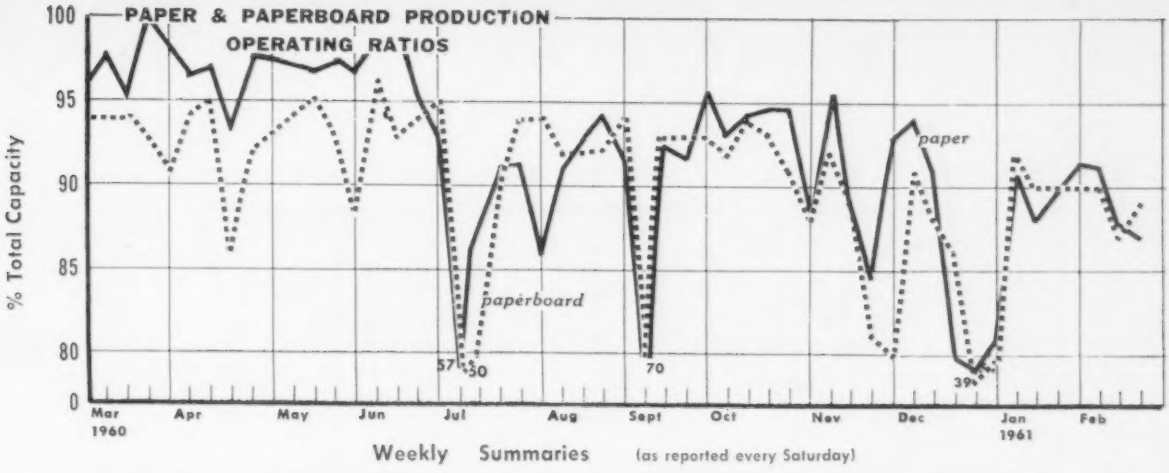

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REMEMBER THESE DATES

National Paper Trade Ass'n Annual Convention, Waldorf-Astoria Hotel, New York — MARCH 26-29

Technical Ass'n of the Pulp and Paper Industry, 12th Annual Coating Conference, Statler-Hilton, Buffalo, N. Y. — MAY 8-10

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"Dryden is the new standard by which all pulps are compared."

At trade conventions, when the subject of "Quality" comes up, paper men always *start* with talk of Dryden.

As one customer recently told us, "Dryden is the new standard by which we compare all other pulps. When a new pulp comes along, our research people compare it with Dryden."

Our friend was referring to Dryden Bleached Sulphate Pulp, but the same can be said for Dryden's unbleached, electrical, and other specialty pulps.

Whether you want strength, or brightness, or cleanliness, or purity, Dryden pulps are unsurpassed.

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POLYETHYLENE PROCESSING TIPS

PROPERTIES THAT AFFECT GREASEPROOFNESS OF POLYETHYLENE COATINGS

As used in the paper coating industry, the term greaseproofness generally refers to conformity of a polyethylene coating with Military Specification MIL-B-121A. This specification defines the grease resistance of polyethylene-coated paper used to package material which is grease-coated for long-term storage.

Under this specification, greaseproofness is tested by measuring the resistance of polyethylene-coated paper to a turpentine solution of a dyed grease. Test conditions require 24 hours exposure to the solution at a specified temperature and relative humidity. To meet the specification, all samples tested must be free of dye color on the uncoated side of the paper at the conclusion of the test period.

Although this specification was drawn up to satisfy the stringent requirements of military applications, it is also employed to define the grease resistance of polyethylene-coated paper to be used for industrial and food applications. However, there are many cases where the requirements of MIL-B-121A may be reduced and still be entirely satisfactory. How far these requirements may be lowered can best be determined through actual tests with the item to be packaged.

Importance of Resin Density and Melt Index

One resin property having an important effect on the greaseproofness of a coating is density. Generally, as resin density is increased from 0.915 to 0.930 and higher, the grease resistance of a polyethylene coating of a given weight improves considerably, as shown graphically in Chart 1. Polyethylene permeability to gases and liquids is similarly affected by density, as previously discussed in this series (U.S.I. Polyethylene Processing Tips, Vol. II, No. 2, and Vol. IV, No. 3). This is to be expected since greaseproofness is one aspect of permeability.

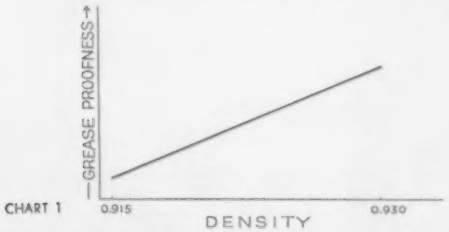

CHART 1

Melt index also influences greaseproofness, decreasing melt index resulting in improved grease resistance. However, melt index has less of an effect than density. Chart 2 shows this relationship.

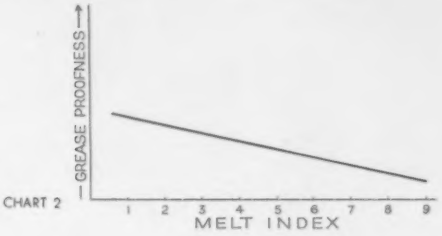

CHART 2

Balancing of Effects

But the paper coater seeking to produce grease-resistant polyethylene coatings cannot consider the effects of density and melt index on grease permeability alone. He must also consider the influence of these properties on the economical operation of his equipment. Such problems as increasing neck-in and curl resulting from the use of higher-density resins must be evaluated before selecting a resin for a given application.

Influence of Coating Weight

Greaseproofness of the finished sheet also depends on the weight of the polyethylene coating applied to the substrate. The greater the coating weight or thickness, the better the grease resistance. With a thicker coating or a resin of higher density, the likelihood of individual paper fibers fracturing the film surface during coating is reduced. With very heavy coatings, however, curl is increased and slower speeds are required.

What Type of Coating?

Theoretically, a heavy enough coating of any polyethylene resin will produce a sheet which will pass MIL-B-121A. But from a practical standpoint, the lowest coating weight which gives the most coverage per pound of polyethylene is an obvious ideal. This can be accomplished by selecting the highest-density resin which has good processibility, acceptable adhesion, and reasonable neck-in, and permits high operating speeds.

Economical coatings meeting MIL-B-121A requirements can be produced with PETROTHENE® coating-series resins. These resins usually yield a proper balance of properties wherever greaseproofness is the primary objective. Where other objectives are predominant, U.S.I. Technical Service Engineers will be glad to recommend the proper resin for your application. They'll also work with you on any processing problems you have.

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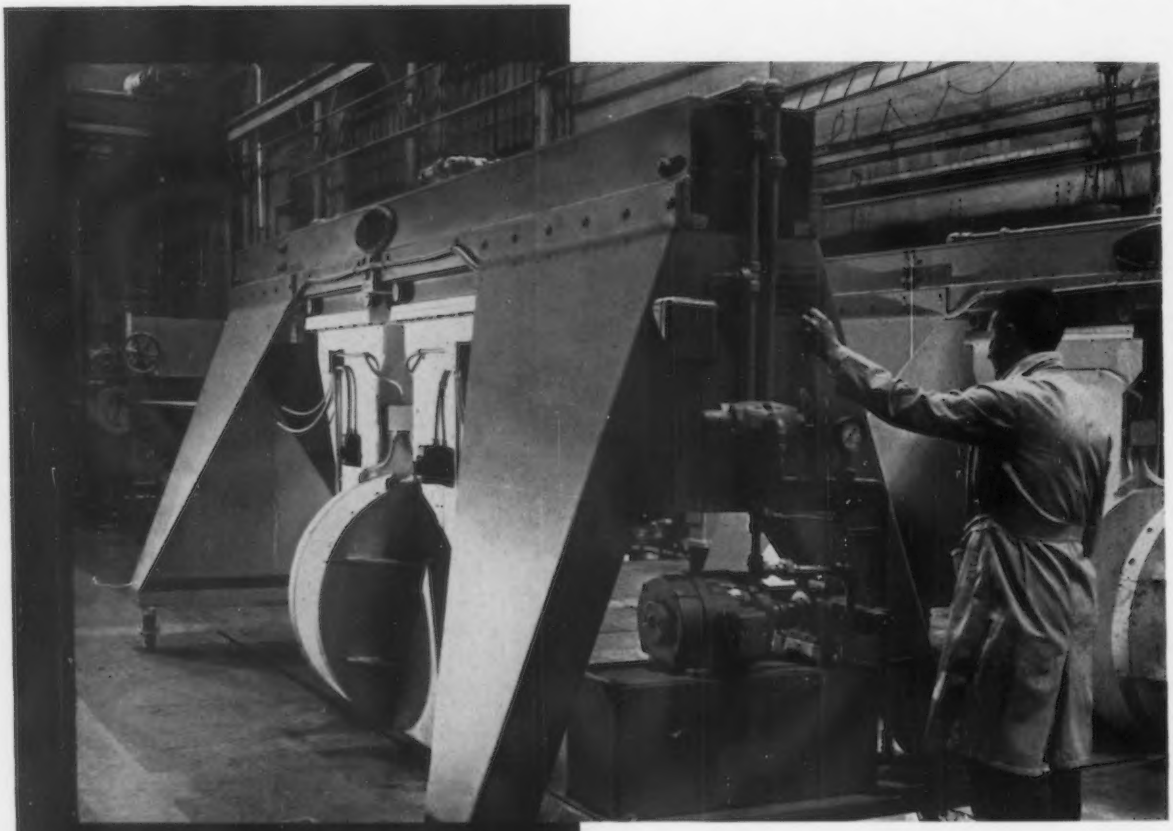
our business to develop equipment
to help you **REDUCE YOUR COSTS**



Newly designed Valley Portable Roll Header with electrically heated heads. This mobile unit can "head" rolls at any number of locations, thus saving costly roll handling and moving operations. This is another example of a specially designed and engineered piece of equipment to meet the requirements of a customer and to aid in reducing costs.

in more and more
finishing departments,
as throughout the paper mill,
it's equipment by . . . .

VALLEY

IRON WORKS CORPORATION
Subsidiary of Allis-Chalmers Manufacturing Co.
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NALCOAG® Adds ANTI-SLIP Features to Your Kraft, Boxes or Bags with Low-Cost 49-50% Colloidal Silica

Coating of Nalcoag Improves Load Stability, Reduces Slippage of Bags and Cartons During Shipping and Handling

Now you can add a *non-skid* feature, *another sales advantage*, to the paper and paperboard you make for use in shipping containers . . . and you can add it economically with low-cost Nalcoag colloidal silica.

Protect Products, People

Sliding boxes, bags and cartons are a dangerous and expensive problem. Damage to products during shipment is often traceable to slipping and sliding containers . . . and the possibility of falling bags and cartons is an ever present hazard to the men engaged in shipping, receiving and warehousing operations.

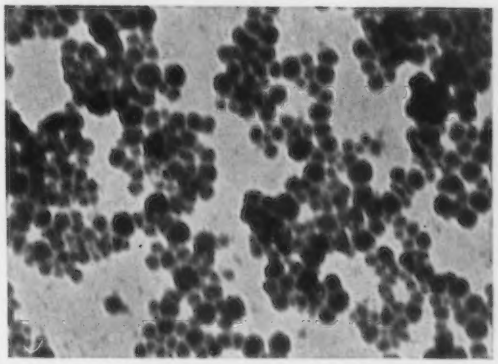
Nalcoag coatings create a frictionizing effect that greatly reduces the surface slippage. Bags and boxes stack higher with a far greater margin of safety . . . loaded forklifts travel faster, take steeper ramps and inclines with Nalco treated non-slip loads.

Improve Package Appearance

Even though a Nalcoag coating is invisible, it can produce visible improvements in containers. Treated bags and boxes have good soil resistance qualities . . . are cleaner, better looking on reaching destinations. And when a Nalcoag coating is applied *before* printing it has a sealing effect that reduces ink penetration, stops "feathering" and assures a sharper, cleaner package design that enhances customer appeal.

Economical, Easy-to-Apply

Effective frictionizing can be accomplished with very low dosages of Nalcoag. In some cases as little as 1/100 lb. of silica will treat 1000 square feet of paperboard, and seldom is more than 1/10 lb. required.



Silica particles in Nalcoag are so small they are hardly visible even in this photomicrograph at 65,000 magnifications. Nalcoag coatings on paperboard containers are not visible, but they create a powerful frictionizing effect on treated surfaces. Products packaged in bags or boxes are much safer during shipping, handling and stacking if the packages have a non-skid Nalcoag coating.

New Nalcoag 1050 gives you real economy in the highest silica concentration yet available . . . a highly stable, fluid, easy-to-use product of *49–50% silica!* It goes farther, lasts longer than the dilute 30% concentration now widely used . . . and it markedly reduces shipping, storage and handling costs.

Application of Nalcoag to sheet or board is relatively simple. Spraying, roller-coating and calender stack applications have all been used successfully and can be readily adapted to most mill operations.

Ask For Product Data, Technical Help

Nalco technical people are ready to help you make a better, safer, *non-skid* product. They will work with you *in your mill* . . . provide prompt, experienced assistance in establishing the best method of application and the optimum chemical dosage.

Product data on Nalcoag is ready for you, too. Why not write for it today . . . and ask us about *anti-slip* before your customers ask you!

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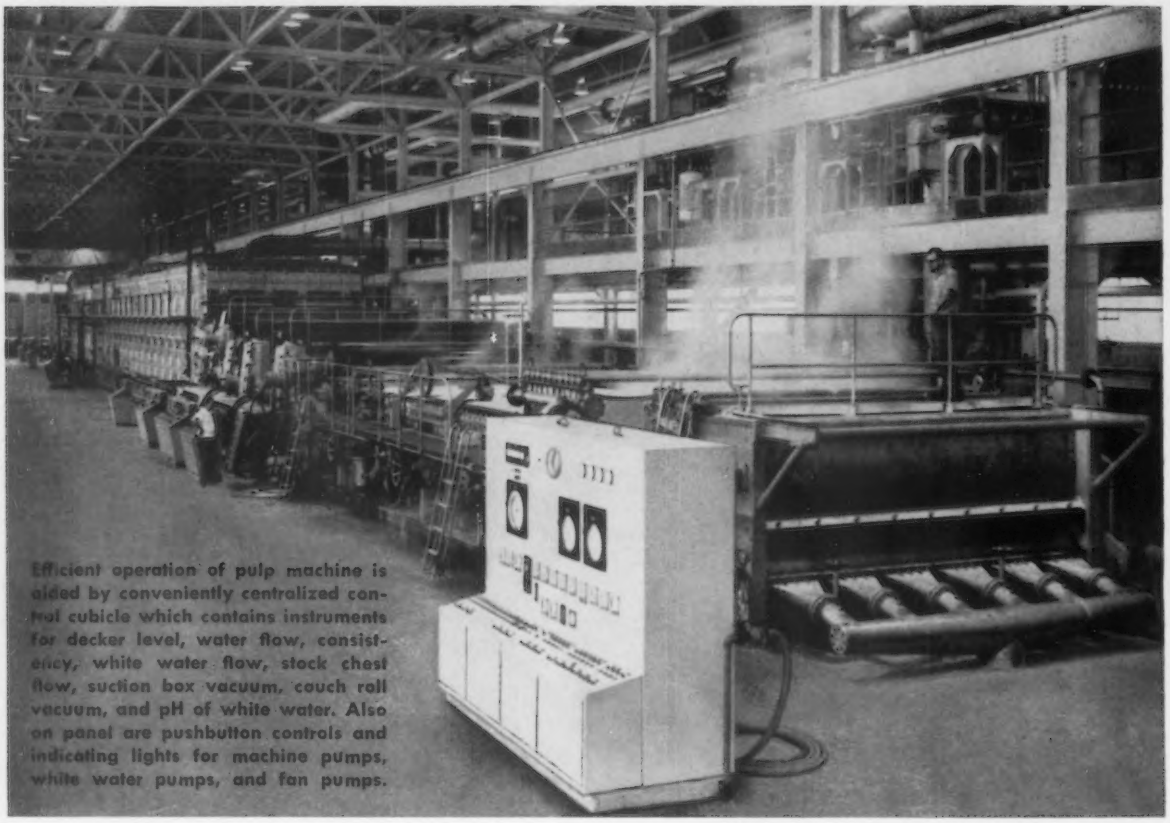
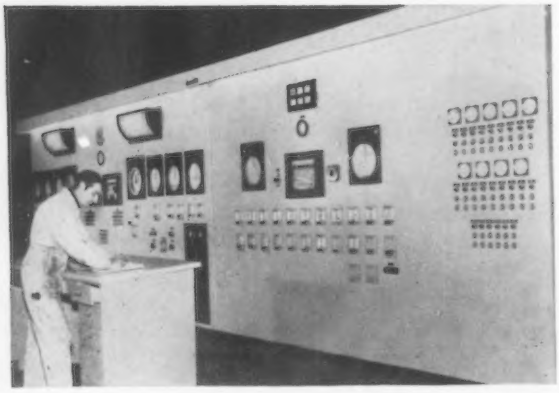


Efficient operation of pulp machine is aided by conveniently centralized control cubicle which contains instruments for decker level, water flow, consistency, white water flow, stock chest flow, suction box vacuum, couch roll vacuum, and pH of white water. Also on panel are pushbutton controls and indicating lights for machine pumps, white water pumps, and fan pumps.

Pushbutton pulping boosts quality and production at new Alaska mill



Controls for recovery boilers and liquor evaporators are grouped on one panel. Throughout the process, all variables are precisely measured and controlled, so that the mill can produce consistently high grade alpha cellulose with maximum economy and efficiency.

Honeywell controls make pulping completely automatic at the new sulfite mill of Alaska Lumber & Pulp Company, near Sitka. Built to supply cellulose to Japan's rayon industry, the mill daily produces 340 tons of top grade dissolving pulp, and is a fine example of the efficiency and quality control that inevitably result from modern instrumentation.

Controls for each application were chosen from the complete line of Honeywell instruments. Cam programmers automatically steam all digesters. In the acid plant, *ElectroniK* instruments record burner temperatures measured by *Radiamatic* radiation detectors, and various temperature and flow controllers regulate liquor evaporators and recovery boilers. In the washing operation, *Tel-O-Set* miniature instruments control shower water flow and filtrate tank level. In the bleachery, ratio controllers accurately add bleach in relation to pulp flow. Automation is complete even to the *Dur-O-Pulse* telemetry system that monitors settling basin level at the filter plant and transmits the information to the turbine room panel.

Your nearby Honeywell field engineer can help you gain the many benefits of custom-designed, modern instrumentation in your own mill. Call him today . . . he's as near as your phone.

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The groundwood method produces twice as much pulp per cord of wood as other processes, but its low color was a drawback limiting its field of usefulness. In the 1940's Becco worked out a Hydrogen Peroxide bleach producing a superior brightness with improved softness and bulk as well. As a result, a good many manufacturers continue to use Becco to make groundwood paper a more desirable product.

Do you have an interest in groundwood or chemical pulps? Becco, with more years of bleaching experience than any other peroxide manufacturer, can help you. Address: Dept. PTJ-61-2.

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Lower costs tomorrow!

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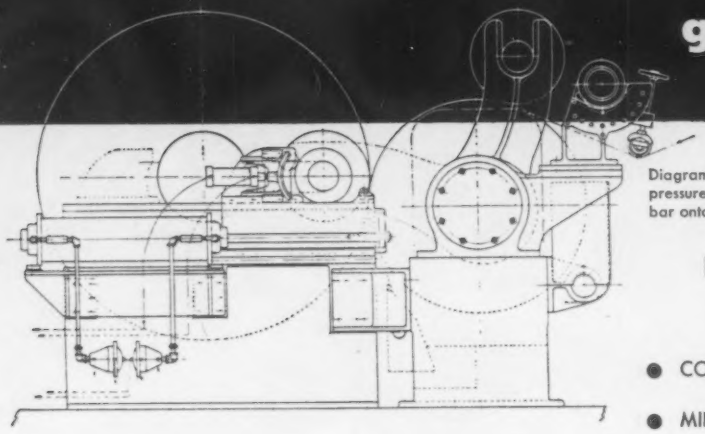
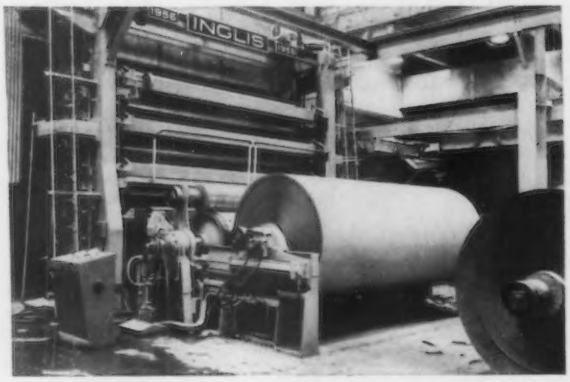


Diagramatic sketch of an Inglis pneumatically loaded, constant pressure Pope-type reel, showing run of sheet under spreader bar onto reel bar.

IMPROVED INGLIS POPE-TYPE REEL

- CONSTANT PRESSURE
- MINIMUM NUMBER OF MOVING PARTS
- SEMI-AUTOMATIC OPERATION
- RUGGED CONSTRUCTION

Here is another Inglis paper machine component which is speeding up the building of mill rolls in several Canadian mills. Because of its constant pressure feature it produces mill rolls of uniform hardness. It is provided with a reel spool starter, and reel spool brake. The starter brings the reel spool up to speed before it comes into contact with the sheet and reel drum. The brake enables the reel spool to be stopped in any position on the horizontal ways. By means of this improved Inglis reel, mill rolls are built better and faster. This is just one of several Inglis improvements it will pay you to investigate.



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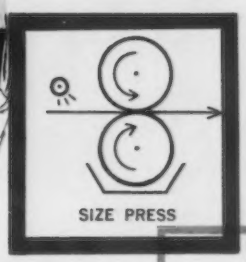

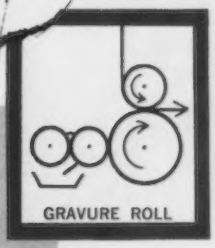

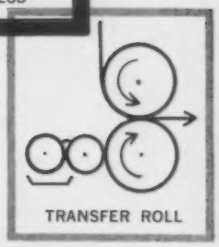

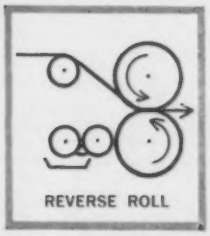

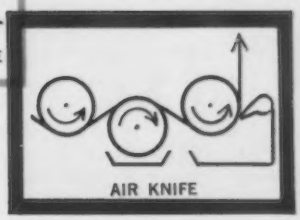

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assists us in developing improved paper coating clays to meet your future needs.

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is only part of our laboratory facilities which include a wet lab, a coating color preparation system, a super calender, and equipment for testing optical, physical, and printing properties—the most completely equipped development laboratory in the clay industry.

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1,000 Rotabelt Suction Units in Operation...

FEATURES INCLUDE

Increase in wire life as great as 300% by the total elimination of friction between the wire and the flat suction boxes previously used. Reduction in couch drive (up to 30%) by eradicating the drag in the wire caused by flat suction boxes. Increase in production (a) By using a higher vacuum on the greater suction area of the "Rotabelt" than is possible with flat suction boxes, thereby producing as dry or dryer sheet at the increased machine speed. (b) By utilising for production down-time normally required for wire changing. (c) Because of less wet breaks due to the even dryness of the sheet across the machine and the increase in machine efficiency. Reduction in machine maintenance due to fewer wire changes and less maintenance on flat boxes and ancillary equipment. The "Rotabelt" requires negligible maintenance.

Send for leaflet to-day

W. P. EVANS & SON LIMITED

.... and proving so successful that many mills are placing repeat orders. Proof enough of the outstanding reliability, economy and all round versatility of this unit.

ROTABELT
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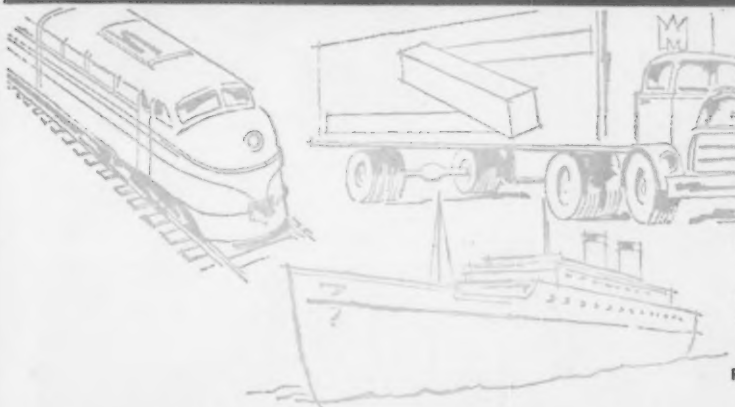
suction unit

Papermakers Engineers
NASHUA, NEW HAMPSHIRE
Tel: Tuxedo 2-9081

Buyer's Memo to Himself:

Must have better faster service... Call Marathon



Strategically located sales offices; excellent transportation and shipping facilities by land, water, air or rail; and more than adequate production from manufacturing plants located in the midst of the best timber-producing regions of the country—all guarantee you a dependable source of supply, wherever or whenever needed.

Keep Marathon in mind for pulp, printing papers, paperboard and specialty materials.

A DEPENDABLE SOURCE FOR QUALITY CONVERTING MATERIALS

Pulp, Paper and Paperboard Department

marathon

A Division of American Can Company

MENASHA, WISCONSIN

HOW DO OTHER MILLS SOLVE THEIR PUMPING PROBLEMS?

1 **Glassine and grease-proof papers.** R-W Paper Company makes them for wrapping bacon, butter, hams and the like. Because of dependability in operation, R-W engineers specified Goulds pumps. Over a score of Goulds centrifugal pumps handle paper stock, hot and cold water, and waste water for various services at the plant in Longview, Washington.

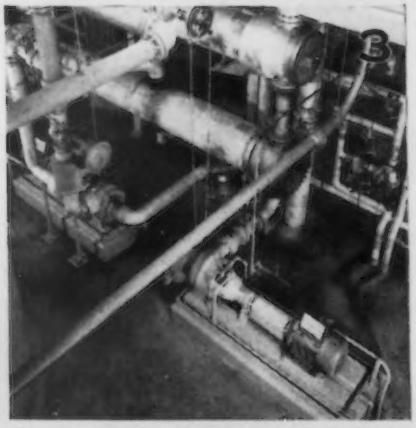
2 **Marathon Southern Corporation uses over 100 Goulds pumps.** Model 3450's for black liquor. 3405's and 3420's for white water and liquor. 3135's for stock. 3420's for fan service. 3189's for rosin size emulsion. The Goulds line is broad. It offers you a pump to solve *any* pulp and paper pumping problem.

3 **Continuous digester—a real rough pumping service**—handles hot, corrosive, abrasive liquids at Hammermill Paper Co. To meet continuous digester's critical demands, Hammermill chose Goulds heavy-duty process pumps. Advantages? Extra-thick casings, water-cooled bearings, fully-open impeller are some. There are more. Write to Goulds for the full story.

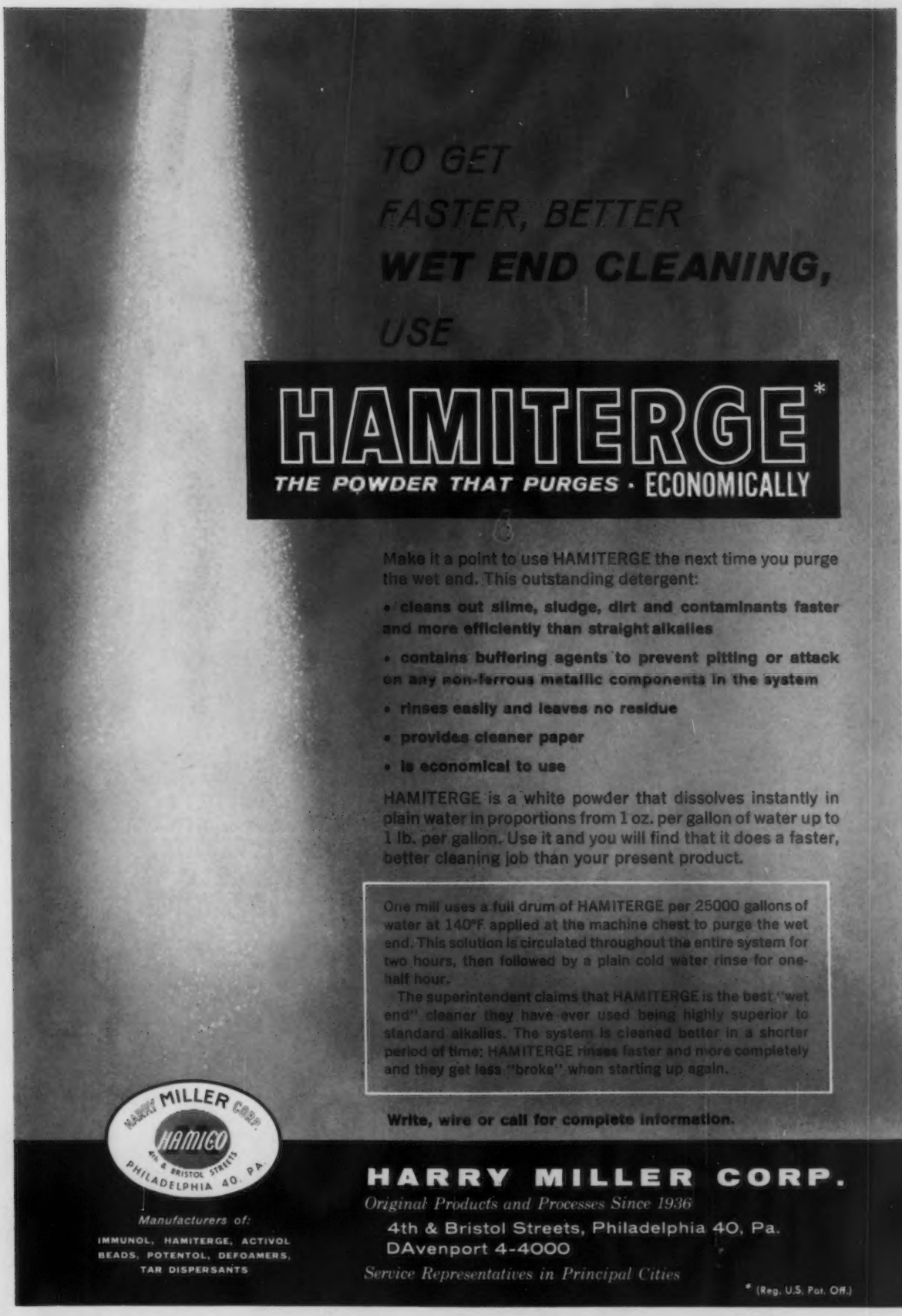
4 **24-hour delivery protects $600,000 investment.** Battenville Paper Mills Inc. needed ultra-fast delivery of a pump for a new paper machine. They telephoned Goulds long distance at 11 a.m. on Thursday, had their pump at 1 p.m. Friday. Could be a moral here. When you're in a spot—call Goulds.

5 **Paper quality improved by cleaning.** The cleaner must receive the 1% white water at high pressure. For continuous operation on this tough service, Michigan Paper Company's engineers selected a Goulds 8″ Model 3405 double suction pump.

Let us help you with your pumping problems. Pumps are our *only* business. Chances are we can save you time and money. Goulds Pumps Inc., Department PT-60, Seneca Falls, New York.



GOULDS PUMPS


TO GET
FASTER, BETTER
WET END CLEANING,
USE
HAMITERGE*
THE POWDER THAT PURGES · ECONOMICALLY
Make it a point to use HAMITERGE the next time you purge the wet end. This outstanding detergent:
• cleans out slime, sludge, dirt and contaminants faster and more efficiently than straight alkalies
• contains buffering agents to prevent pitting or attack on any non-ferrous metallic components in the system
• rinses easily and leaves no residue
• provides cleaner paper
• is economical to use
HAMITERGE is a white powder that dissolves instantly in plain water in proportions from 1 oz. per gallon of water up to 1 lb. per gallon. Use it and you will find that it does a faster, better cleaning job than your present product.
One mill uses a full drum of HAMITERGE per 25000 gallons of water at 140°F applied at the machine chest to purge the wet end. This solution is circulated throughout the entire system for two hours, then followed by a plain cold water rinse for one-half hour.
The superintendent claims that HAMITERGE is the best "wet end" cleaner they have ever used being highly superior to standard alkalies. The system is cleaned better in a shorter period of time; HAMITERGE rinses faster and more completely and they get less "broke" when starting up again.
Write, wire or call for complete information.
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Avoid this $60-a-minute downtime

READ HOW TEXACO'S NEW "STOP LOSS" PROGRAM CAN HELP ELIMINATE UNSCHEDULED DOWNTIME . . . HELP INCREASE NET PROFITS AS MUCH AS 8.8%*

Organized lubrication is just about your best guarantee against costly, unscheduled downtime. A Texaco "Stop Loss" program completely organizes lubrication practices throughout your mill—from purchasing and inventory to actual application.

Texaco lubrication engineers, working with your own engineers, specify the right lubricants, lubrication intervals and procedures for your entire operation. Your circulating oil system is checked for top efficiency. Procedures are recommended to handle water contamination. A fool-proof system of follow-through is set up to guard against dangers of misapplication or overlooking lubrication points.

Results? Drastically reduced downtime. Longer bearing life. A reduction in maintenance costs up to 10%—and more. *This can mean the equivalent of an 8.8% increase in profits from maintenance savings alone.**

Find out today how your mill can benefit from a "Stop Loss" program. Send for our informative folder: "How to Starve a Scrap Pile." Write: Dept. P.T. 32.

Texaco Inc., 135 East 42nd Street, New York 17, N.Y.

**The U. S. Department of Commerce* estimates that a paper mill doing a $10,000,000 yearly business will spend about $650,000 for maintenance. A 10% reduction in maintenance costs would amount to $65,000. Assume that profits average 7.34%—or $734,000. By adding the 10% maintenace saving, profits now total $799,000 . . . an 8.8% increase.

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Canada • Latin America • West Africa

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

Langston Leader

LEADERSHIP BY DESIGN

MAR. 1961 Published for information of paper and board mills by Samuel M. Langston Company, Camden 4, N.J. VOL. 3, NO. 2

Can Be Built For Any Grade Paper or Board

WINDER FOR BETTER QUALITY, LARGER DIAMETER ROLLS

Speedmaster's New Design Assures Better Separation, And Uniform Roll Density

To answer demand at the mills for larger diameter rolls of uniform density, particularly coated grades, Langston has developed a new slitter and winder, the Speedmaster, engineered for larger diameters and incorporating a new design slitter and spreader system on a rotatable cradle.

This system permits location of the slitters closer to the carrier drums than ever before possible and provides more precise control over spreading.

Built to suit a general range of applications from lightest weight tissue to dense printing grades (coated and uncoated) to heavy weight board, the Langston Speedmaster is proving a winder of unusual flexibility.

In producing rolls of larger diameters, the winder achieves uniform rewind density through: *automatic* con-

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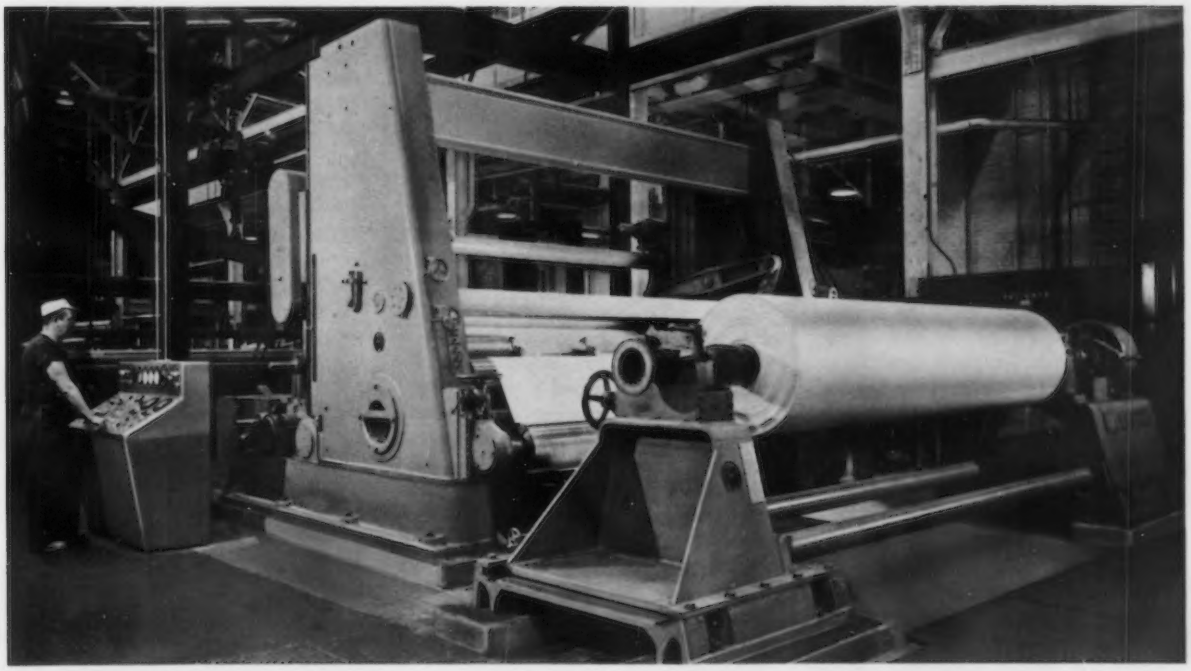
LANGSTON'S NEW SPEEDMASTER, a winder of unusual flexibility



SPEEDMASTER at prominent mill includes Langston backstand with lateral adjustment, oscillation and constant tension braking

. . . easy access for slitter setup

. . . pushbutton adjusts degre

Assures Better Separation, And Uniform Roll Density

(Continued from preceding page)

trol of the draw between the main winding drums; by compensation for the increasing weight of the rewound roll through automatic control of rider roll nip pressure; by lifting on the rewind shaft, if its construction permits; and by automatic web tension control.

High Speed Operation

Available in speeds and in widths to suit the trim of paper machine, super calender or converting applications, the Speedmaster is of rugged construction with box-section side frames and of low silhouette for minimum headroom.

Speedmasters are operating in a number of prominent mills on board and fine papers and in converting operations where they are producing results that show achievement of all the design aims:

- Larger diameter rolls than heretofore possible, particularly on coated papers, to satisfy the demand of the mills' customers for more lineal footage per roll (which means, for example, to printers longer runs and less downtime).
- Precision control of roll density.
- Faster winding to meet increased paper machine speeds.
- Greater roll output to reduce manufacturing costs.
- Assured separation of rolls through push-button control of the degree of spreading required.

The new design Langston Speedmaster is an outgrowth of demand from the mills for a winder that would meet changing conditions in the industry. The mathematics and economics of larger rolls have become an increasingly important mill consideration. Simply put, it means the mills want more lineal footage per roll because their customers want longer runs and less downtime and less slowdown for splices.

For example, a printing grade of 45 lb. to 55 lb. basis weight (c-2-s), when raised 25 percent from 40-inch diameter rolls to 50-inch rolls, gains approximately 55 percent in lineal footage. To the printer desiring more press running time and less waste in slowing down for splices, the large proportional increase in lineal footage becomes a significant economy.

Want Greater Output

At the same time larger diameter rolls mean something more for the mills than added customer satisfaction. They also want greater output to reduce costs, and larger diameter rolls mean less splicing, fewer rolls to handle and less downtime, with consequent savings down the line.

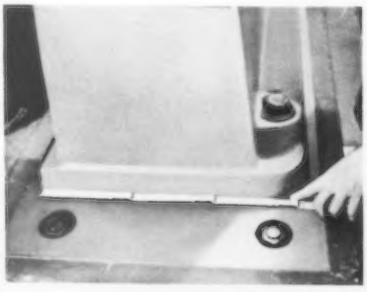
But to turn out larger diameter rolls, the mills needed a winder that would also solve the problem created by the increase in weight of the larger rolls. To offset the tendency of the roll to become increasingly hard with added diameter and weight—with the consequent risk of the bursting of a too tightly wound roll—mills wanted a winder with precision control of roll density and with the ability to compensate for the limited tensile strength of paper.

Finally, paper machines, too, were increasing in speeds. And this meant that a winder combining all the other achievements would have to be built for speed, too.

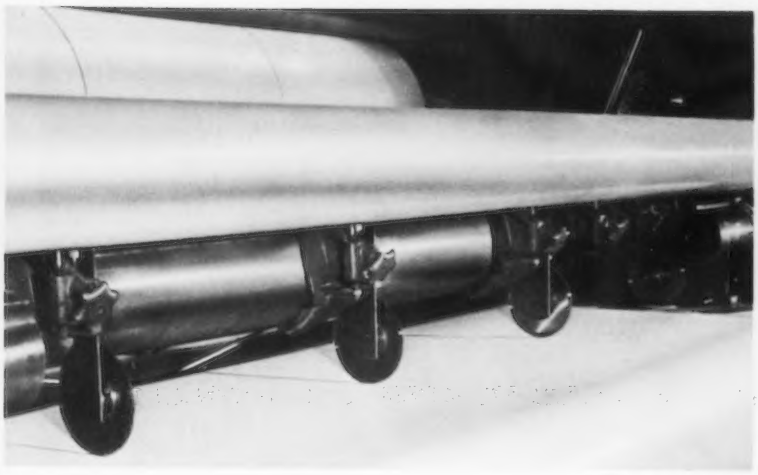
Features That Do Job

All this the Speedmaster accomplishes by a combination of engineering features, whose principal components are large diameter winding drums, automatic torque control, automatic rider roll control, automatic rewind shaft lift, tension control and precision spreading control. Where required (for instance, on coated printing papers) a power driven spreading roll and power driven idlers are furnished to eliminate sheet marking. These features are supported by a number of auxiliary components to ease operation of the winder and its maintenance and to safeguard personnel.

The design of the Speedmaster takes into regard such effects on drum diameters as speed, structural strength, rewind diameter and nip pressure and yet permits construction, depending on the needs of the application, in any of a wide range of drum diameters.



. . . for better rolls, a rugged frame



. . . clean slitting in action

. . . top quality shipping rolls

Torque Control

Among the new winder's features to achieve uniform density of rolls is automatic control of the draw between main winding drums This permits control of the sheet tension in the layers comprising the roll, in this way effecting a high degree of density control.

Depending on the demands of specific applications, paper grades and diameters, Langston can furnish the Speedmaster with various means of draw control between the drums. Involved in the question is the type of drive selected for the winder, either two-motor or single motor, both of which are available. For instance, two-motor drives can be of the controlled type, programmed to compensate *automatically* for the tendency of uncontrolled and increasing roll hardness with increasing weight of the roll.

(The subject of drives is extensive and will be treated fully in a subsequent issue of the Langston Leader. Write to Langston to be sure to get on the mailing list for your copy.)

Rider Roll Control

Another factor helping achieve uniform density is control of rider roll nip pressure. This accurately and *automatically* maintains the correct rider roll force, decreasing this force as a function of roll buildup, thus importantly contributing to the desired uniform roll density. For example, by being able to vary precisely and automatically the amount of weight applied by the rider roll, the operator can pre-select for his run the rider roll weight proven best for certain basis weights, for instance, 2500 pounds for 14-caliper board or 300 pounds for 45 pound bond. The operator can also raise or lower the rider roll by push-button rather than by wheel or through chain drives.

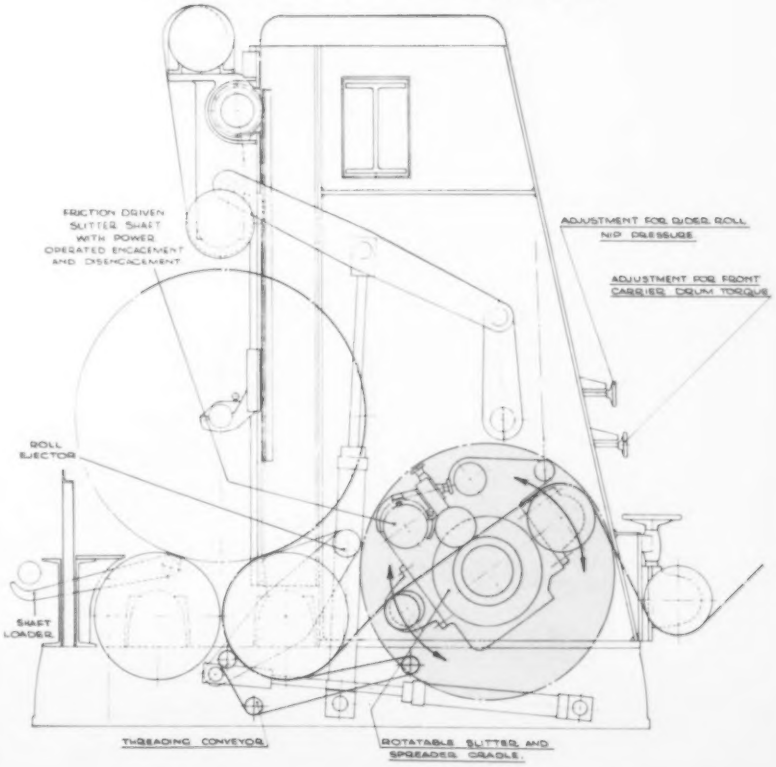
The rider roll is driven by a belt or separate satellite motors electrically interlocked with the main variable voltage drive. By controlling the torque input to the rider roll, additional control of roll density is obtained.

Rewind Shaft Lift

Still another factor contributing to uniform roll density, particularly in production aiming at larger diameter rolls, is the Speedmaster's hydraulic lift of the rewind shaft brackets. By counter-balancing the weight of the

(Continued on next page)

CROSS SECTION OF SPEEDMASTER


FRICTION DRIVEN SLITTER SHAFT WITH POWER OPERATED ENGAGEMENT AND DISENGAGEMENT
ADJUSTMENT FOR RIDER ROLL NIP PRESSURE
ADJUSTMENT FOR FRONT CARRIER DRUM TORQUE
ROLL EJECTOR
SHAFT LOADER
THREADING CONVEYOR
ROTATABLE SLITTER AND SPREADER CRADLE

(Continued from preceding page)

shaft, this feature eliminates shaft deflection with its resultant whipping of the shaft, when running narrow rolls. By pushbutton, it enables the operator to easily raise and lower the shaft for threadup and startup, and toward the finish of a large roll apply supplemental reduction of nip pressure as desired (where shaft construction permits). However, the mills' customers must be sold on using rewind shafts large enough to take the added strain.

Finally, web tension control, another important factor in producing larger diameter rolls, is engineered to meet the needs of the specific winder application and may be manual or automatic, constant or tapered tension.

(Web tension, like the subject of winder drives, merits special fuller treatment, which also will be provided in a future issue of the Langston Leader.)

New Slitting Concept

The winder's new slitting and spreading concept mounts slitters and spreader in a cradle which is rotatable 60 degrees. This arrangement permits locating the slitters far closer to the first carrier drum than ever before possible, thus providing a shorter draw of the slit web. At the same time, spreading is incorporated in the carriage so that the slitters and spreader are in close proximity, with resultant positive roll separation. The degree of spreading is attained by pushbutton control.

Another advantage accrues by mounting the slitters in the rotatable carriage. Access is much more convenient. By pushbutton, the operator rotates the carriage to its extreme position, from which both top and bottom slitters can be set up quickly from a standing position on the mill floor. There's no need for the operator to climb up on the machine to make adjustments.

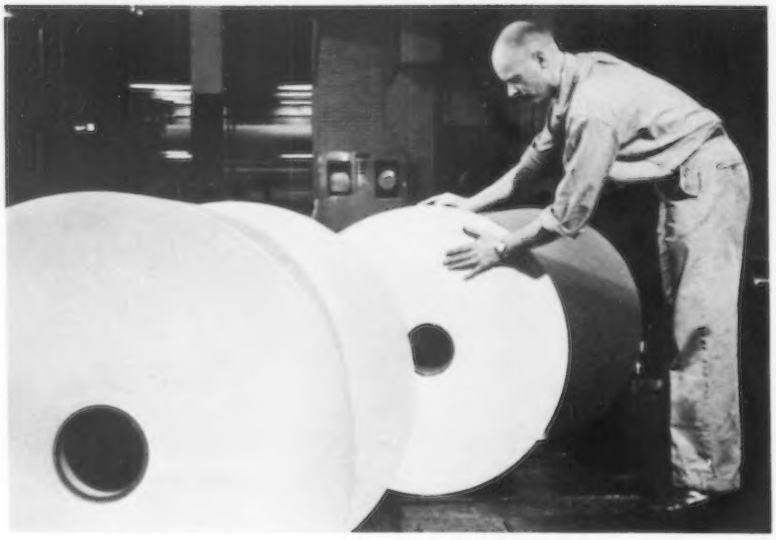
Further, since the rotatable carriage includes the spreading system—either bow-type spreader roll or adjustable bar-type—the operator again by pushbutton can rotate the spreader to increase or decrease the degree of spreading obtained. This makes the Speedmaster conducive to narrow slitting and assures freer separation of rolls.

Precision Slitters

The power-driven slitters are of the new Langston precision design guaranteed to run true within .001". By minimizing variations in web width, these precision slitters produce rolls free of annular rings.

The new individual slitter assembly includes several basic improvements. First, the slitter holder has a wider contact area on the slitter shaft, thus increasing the holder's stability by producing a better column ratio or base-to-height relationship. The hubs of the slitter holders are interlocking to permit narrow slitting. Also, the hub is solid rather than split, thus inherently resisting any force leading to distortion that would normally cause a cocked slitter.

The gripping action is accomplished by a leaf-spring principle. This avoids any hinge effect or distortion from a weak area and holds the slitter true. The leaf-spring locking action makes it unnecessary to use set screws and gibs against the shaft for holding the assembly in position.



. . . easy separation, good edges and smooth sides

Removable for Sharpening

Made with maximum care and accuracy to minimum tolerance, the Langston slitters are also balanced and can be sharpened on the machine or easily removed for sharpening.

The frictionally driven slitters are of the fixed shear-angle type, which minimizes the chance of improper setup or of slitters getting out of line. The frictionally driven slitter holders incorporate a leaf spring to insure proper pressure between slitter blades. The holders are made of aluminum and are laterally adjusted for width of slit by handwheel through a rack and pinion system. They can be engaged or disengaged for threadup by pushbutton through hydraulic action.

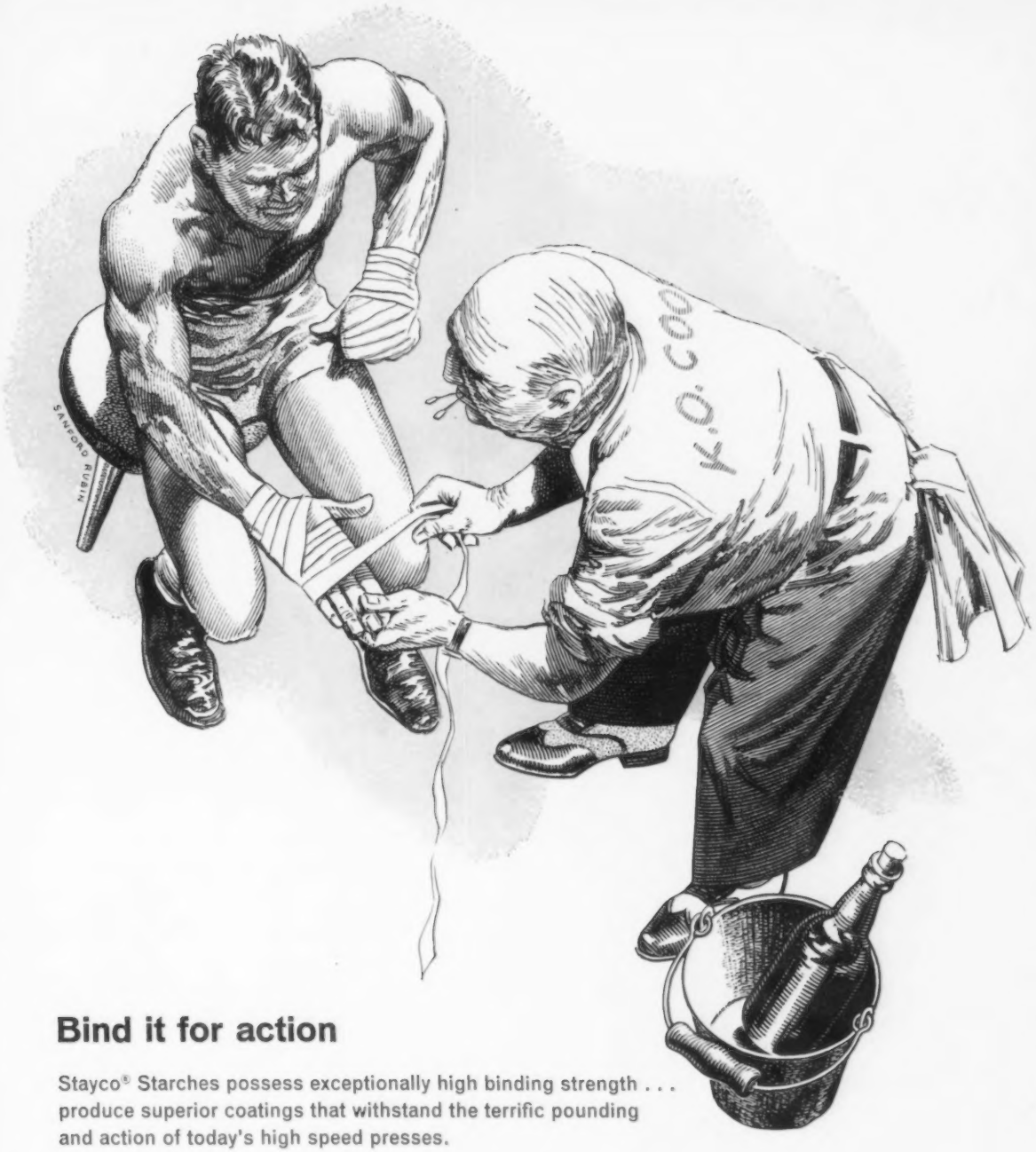
Other Speedmaster features include:

- Removable ways for rider roll and rewind shaft carriages for easier maintenance.
- Automatic threading device for ease of threadup.
- Power engagement and disengagement of slitters.
- Rewind shaft bearing housings of the spherical ball-joint type for maximum flexibility in use of rewind shafts and reduction of side movement.
- Anti-friction thrust bearings for the rewind shaft which rotates in a stationary housing to minimize lateral movement and offset.
- Anti-friction bearings throughout the machine, including thrust bearings for all elements in direct contact with the roll of paper.

Options include: automatic shaft loader, roll ejector, shaft strippers, rewind shaft lift and various types of roll lowering equipment.

A control console is provided for safe efficient operation. Various types of nip guards can be provided.

When your aim is increased production and larger diameter straight-sided, uniformly dense rolls, the Langston Speedmaster gives you modern advanced design with new and proven features in winder engineering. No matter what the grade of board or paper, there's a Langston Speedmaster that best fits your needs. Langston sales engineers are always at your service to help you plan your slitter and winder requirements.



Bind it for action

Stayco® Starches possess exceptionally high binding strength . . . produce superior coatings that withstand the terrific pounding and action of today's high speed presses.

Optimum printability requires papers with coatings of highest adhesive quality . . . maximum binding strength. Stayco Starches improve pick resistance . . . increase internal bond and strength . . . produce superior coatings of low viscosity, high solids, excellent color and smoother printing surface to assure reproductions of eye-catching quality.

A. E. **STALEY** MFG. CO.
Decatur, Illinois

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don't blame the coater

SMOOTHING PRESSES

PATTON

Many of today's coating problems can be laid directly at the door step of other equipment. As you pin down sources of trouble one-by-one, you may be faced with a bewildering array of alternatives. Which improvement should be made first? How much will the various improvements cost? Will changes made now help or hinder future changes?

Patton will be happy to make an engineering survey of your paper or board machine. The resulting document provides clear answers about each alternative—in dollars and cents figures you can use to plan your modernization spending wisely.

The Patton Manufacturing Company, Inc., Springfield, Ohio, invites your inquiry for further information.

Trends

Scores Waste Paper Selling Methods

"During the inaugural address, we heard the new president say: 'Don't ask what the country can do for you; ask what you can do for the country.' The thought nearly transposes to the paper stock business. Ask what you can do for the customer. Even better, find out what you can do for the customer," D. W. Bergstrom told the Paper Stock Institute of America annual meeting. "But of all the things we buy and use, paper stock is the largest item of all. And, believe it or not, of 1,200 sales people calling on us every year, less than 1% represents our paper stock dealers. Only 1% from waste paper industry serves us as the other 99% supplying other items serve us, and that 1% is getting 55% of our purchasing dollar. Believe me, our pulp suppliers, your competitors, are really calling on us." Mr. Bergstrom's remarks confirm the editor's long held impression that the waste paper dealers know nothing about, or at least don't try to practice merchandising or marketing. Is it therefore any wonder that waste paper is each year obtaining a declining share of the paper and board furnish?

Paper & Board Mills Ran 89% in February

Paper and board mills during February operated in the range of 89% of capacity.

Corrugated Box Output off 3%

Corrugated box production during the first two months of 1961 ran about 3% behind the figure for the corresponding period last year.

U. S. Wood Pulp Imports—1960

Total wood pulp imports, in short tons, based on preliminary data received from the Census Bureau, for the year 1960 in comparison to 1959 are as follows:

	January-December 1960	January-December 1959	Per Cent Change
Canada	2,039,473	1,983,267	+ 3
Sweden	198,456	281,150	−29
Finland	117,311	128,195	− 8
Norway	17,422	28,339	−39
Other Europe	1,075	1,686	−36
TOTAL EUROPE	334,264	439,370	−24
TOTAL WORLD	2,383,890(A)	2,436,892(B)	− 2

(A) Includes 10,153 tons of rayon and special chemical pulp from Union of South Africa.

(B) Includes 14,256 tons of rayon and special chemical pulp from Union of South Africa.

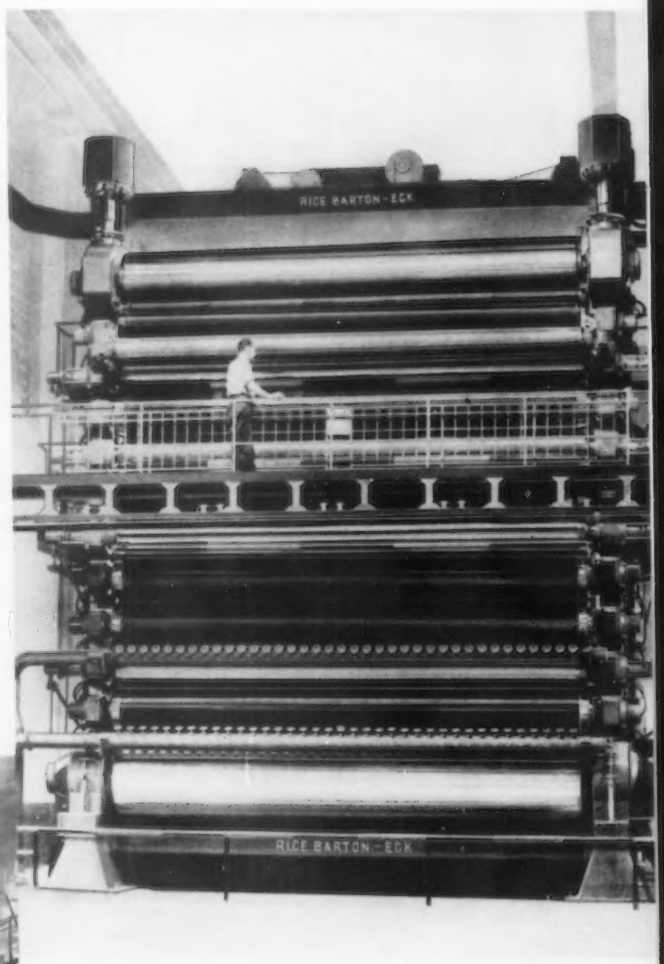
The BIG name in Stacks!

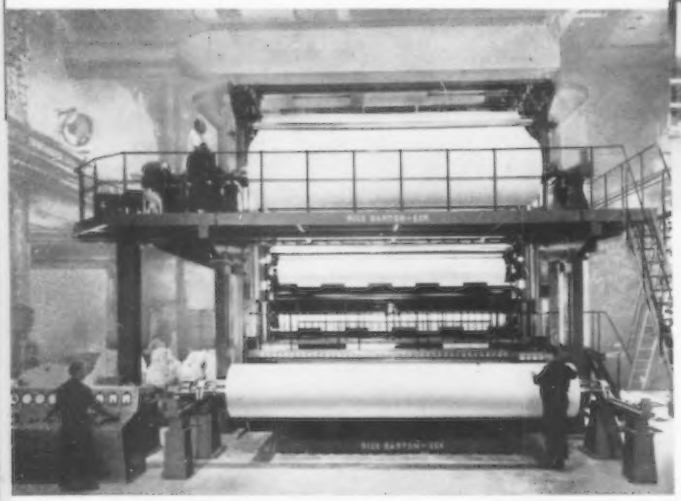
RICE BARTON-ECK builds **HIGH SPEED SUPERCALENDERS BIG** and builds them often. More than one supercalender a week was installed last year and over 350 have been installed in the past ten years.

This giant 230″ stack is designed for production speeds up to 2500 f.p.m. and nip pressures up to 2000 pounds.

Here are the reasons **RICE BARTON-ECK** supercalenders are superior:

- High strength open front frames for faster roll changes
- Elevators both sides for easier threading and safer operation
- Hydro-pneumatic pressure system with electric automatic controls
- Unwind and rewind tension control, center or surface type with special roll handling equipment
- Automatic pressure release and quick roll lift





Above—Open front view indicates easy access to rolls. Bearings and housings come off with rolls, housings gibbed to frames. Elevators on both sides of stack are synchronized with threading speed.

Shown left—Closed side shows semi-automatic loading and unloading of rolls and reels. Unwind and wind-up by electric tension control. Control desk for electric and hydraulic systems.

For descriptive folder write today to

Rice Barton CORPORATION • WORCESTER, MASS.

FOURDRINIERS, PRESS SECTIONS, DRYER SECTIONS, CALENDERS AND SUPERCALENDERS, REELS, WINDERS, HEAD BOXES, SIZE PRESSES, BREAKER STACKS, DIFFERENTIAL DRAW CONTROL DRIVES AND CONE PULLEY DRIVES, PULPING EQUIPMENT, HIGH VELOCITY AIR DRYERS, TRAILING BLADE COATERS, FIBRE-FLASH DRYING SYSTEMS

RICE BARTON ECK

PAPER TRADE JOURNAL

WEEK OF MARCH 13, 1961

Chase Bag Realigns Top Management

The board of directors of the Chase Bag Co. have announced a realignment of the company's management. Eight Chase executives were named as having been elected to new posts.

As a result of the move, Francis H. Ludington becomes board chairman and chief executive officer. He previously was president—a position he held since 1934. Succeeding him is Elliot K. Ludington, Jr., who formerly was executive vice-president.

Named as the new executive vice president is Francis H. Ludington, Jr., formerly vice president and treasurer, and, before that, vice president in charge of production. William N. Brock, formerly vice president-director of sales, assumes the post of vice president and assistant to the president. Richard H. Ayers becomes vice president-director of sales, succeeding Mr. Brock. He previously was vice president—Paper Bag Division.

E. K. Ludington, Jr.

John A. Book, formerly vice president-director of labor relations, was named vice president in charge of manufacturing. William Hirst, Jr., formerly controller, becomes treasurer. Joseph H. Kuhr, Jr., succeeds Mr. Hirst as controller.

Rothesay Newsprint Mill in B.C. Reported Still Active

Latest report from Canada is that Rothesay Paper Corp. will build a $30 million newsprint mill near Saint John, N. B. Officials of Sagemines, Ltd., backers of the project, are said to be conferring with provincial officials on a compromise arrangement.

Last November the New Brunswick Legislature passed a bill conferring title to 91 acres of mudflat in Saint John Harbor to the Saint John shipbuilding & Dry Dock Co. (owned by K. C. Irving of Irving Pulp and Paper Co.) thus splitting Rothesay's mill site and cutting it off from the water.

English Firm to Make Millers Falls Products

The Millers Falls Paper Co. is planning an arrangement with an English paper mill for producing its products for sale in that country.

Walker J. Hosmer, president of Millers Falls Paper Co., and Peter Della Luna, its technical director, have been in London completing plans for licensing Spicers Limited of London to make and sell Millers Falls products on a royalty basis.

The Millers Falls Paper Co., located in Millers Falls, Mass., is a two-machine mill manufacturing 20 tons per day of rag content, bonds, onion skin, opaque and erasible technical papers. Other officials of the firm are Joseph A. Constance, vice president, and Wallace C. Stebbins, assistant treasurer.

New Mill? Not Yet Says Green Bay

Recently published reports giving the impression that Green Bay Paper & Pulp Co. plans to build a linerboard mill at Crockett, Tex., in the near future are misleading says a company spokesman. "It was first reported several years ago that we planned to build such a mill, but the plans are no further along and we have not selected a site, although several are under consideration."

Federal Paper Board Plans Acquisition of Box Firm

Federal Paper Board Co., Inc., plans to acquire, through merger, the Worcester Paper Box Corp. of Medford, Mass.

The acquisition, to be effected through an exchange of shares, has been ratified by directors of both companies.

The merger plan will be submitted for approval to stockholders of Federal at the annual meeting April 18.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending February 25, 1961, at 87.0 per cent, compared with 88.3 per cent, revised, for the preceding week. The ratio was 96.5 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paper board production ratio for the week ending February 25, 1961, at 89 per cent, compared with 87 per cent for the preceding week and 91 per cent for the corresponding week a year ago.

(Detailed Statistics on page 68)

James D. Zellerbach

Zellerbach to Receive Seattle University Award

James D. Zellerbach of San Francisco, chairman of the board of Crown Zellerbach Corp. and former ambassador to Italy, has been chosen to receive Seattle university's 1961 national award for economic statesmanship.

Mr. Zellerbach is being honored for his "lasting contribution to American growth and enterprise, for eminent service to the nation at home and abroad, and for personal dedication to the welfare of his fellow man."

The award will be presented by the Very Rev. A. A. Lemieux, S. J., president of the university, at a special luncheon April 5.

Second Waste Paper Symposium To Be Held

Robert R. Howarth, president of Columbia Box Board Mills, Inc., was elected to the board of directors of the Waste Paper Utilization Council, at a meeting of the latter which took place on February 22. Mr. Howarth has taken an active interest in the work of the council for many years. His election completes the roster of the board on which there has been a vacancy.

The council was organized in 1953 to promote the use of waste paper by improving its quality. Until recently efforts have been concentrated on the high grade of paper stock, but in the latter part of 1960 a program of work on the bulk grades was instituted in conjunction with the Eastern Conservation Committee of the Consumers of Waste Paper. This phase of the work is under the direct leadership of George B. Graham, assistant manager of the council.

The board of directors voted to hold a Second Waste Paper Symposium in New York in June, 1962. The exact time and location of this meeting will be announced at a later date.

Newsprint Service Bureau Elects Officers

Richard W. Wortham, Jr., president of Southland Paper Mills, Inc., has been elected president, Newsprint Service Bureau; Curtis M. Hutchins, president of St. Croix Paper Co., has been elected vice president; and J. J. Zima re-elected treasurer.

In addition to Mr. Wortham and Mr. Hutchins, the board of directors comprises: S. E. Kay, vice president, International Paper Co.; M. C. McDonald, president, Great Northern Paper Co.; A. G. Wakeman, chairman of board, Coosa River Newsprint Co.; and G. E. Young, senior vice president, Crown Zellerbach Corp.

Canada Pulp & Board Output Shows Jan. Increase

Output of paperboard in January increased to 76,041 tons, from 72,662 tons a year earlier. Canadian consumption for the month totaled 60,502 tons, compared with 67,320 tons in January, 1960. Exports were 8,795 tons, against 7,334 tons.

Wood pulp production, domestic use, and exports in January were all higher than a year ago.

Total output was 917,666 tons, compared with 889,802 tons in January, 1960. Canadian consumption increased to 696,362 tons from 674,139 tons a year ago and exports rose marginally to 199,915 tons from 199,329

Inst. of Paper Chemistry Sets Date for Seminar

Dates for the Sixth Industry Seminar of The Institute of Paper Chemistry at Appleton, Wis., have been announced by George D. Jernegan, director of continuing education. They are June 11 to 30.

The seminar is a three-week intensive survey and review of science and technology available for application to the pulp and paper industry's present and future problems. The Institute staff participates in the seminar. Enrollment is limited to 24 to provide adequate opportunity for each individual enrolled.

Subjects covered, in terms of current science and technology, will be wood as a raw material, cambial chemistry, wood structure, lignin chemistry; problems in pulping, bleaching and papermaking in terms of biological problems, fiber behavior and beater adhesives, stock preparation, drainage, formation and drying; converting problems, including the mechanical properties of paper, coating, packaging, and the graphic arts.

Loan to Build Egypt a Pulp Mill

The Development Loan Fund has signed a $6,700,000 loan for the construction of a plant for making pulp out of bagasse, at Edfu, Egypt.

WMU Summer Sessions Again Prove Popular

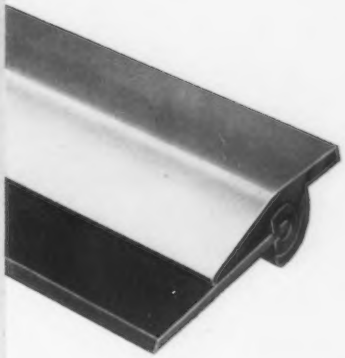
Two three-week sessions on "Principles and Practices of Coated Paper Manufacture," offered each summer by the Department of Paper Technology, Western Michigan University, are again proving extremely popular.

The first session from June 18 to July 8 already has reached a maximum enrollment of 30 persons, and the second session from July 9 to July 29 is nearly full.

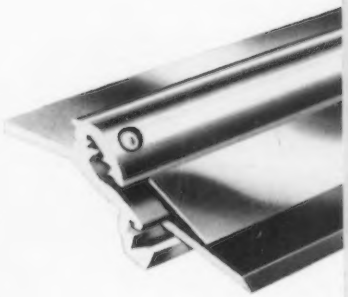
This year the courses are unique in their wide appeal, drawing participants from all over the United States, plus England, Sweden, France, Quebec and Ontario. This marks the greatest influx of foreign students in the history of the program.

A REWARDING CAREER in the pulp and paper industry is considered by this young man, shown examining a new booklet just published by the Syracuse Pulp and Paper Foundation, Inc. The brochure is designed to interest college students in the New York State College of Forestry at Syracuse University.

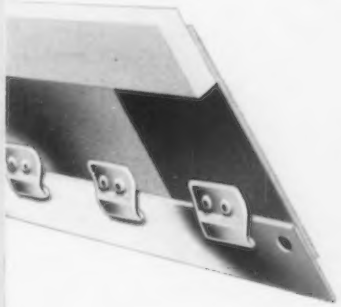
What You Need To Know Before You "Call" A Doctor For A Roll



The Vickery RS Doctor
rates the call when you need a Doctor that holds its blade (whether steel or fibre) securely in place, but at the same time permits easy blade removal and quick blade change even in confined spaces.



The Vickery Hi-Angle Doctor
is relied upon by hundreds of papermakers to keep rolls shining and dry with light pressure and long blade life. Fine particles of fibre or filler cannot get under the steeply angled blade, and it is absolutely watertight.



The Vickery Hi-Flex Doctor
provides the super-flexibility to follow every movement of the roll. Used on calender and supercalender rolls with an extra thin blade, friction is virtually eliminated and wear is minimized.

It pays to get hold of the right Doctor — properly engineered and applied — for each and every roll. Back of every Vickery Doctor is unequalled engineering and application experience.

BIRD
MACHINE COMPANY
South Walpole, Mass.

REGIONAL OFFICES:
EVANSTON, ILLINOIS
PORTLAND 4, OREGON
ATLANTA 9, GEORGIA
Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited
Montreal

PAPER PEOPLE

Roger Strauss

Rolland Aubey

Strauss Heads Nekoosa Research

Roger Strauss has been named manager of research and development for Nekoosa-Edwards Paper Co., a leading producer of writing, printing and business papers.

Rolland Aubey was named assistant manager of the department, with chief responsibilities for paper development.

Truman A. Pascoe, who has held administrative positions in both research and technical departments, will assume a staff position as senior research associate.

Dr. Strauss was an instructor in pulp and papermaking at the New York College of Forestry for five years before joining Nekoosa-Edwards in September 1960. Previously, he spent five years in the paper industry with Hammermill Paper Co. and Bauer Brothers.

Mr. Aubey has been with the company's research department since April 1954. He was formerly associated with Western Condensing Co. and the U. S. Forest Products Laboratory.

James Tracy, a chemical engineer in the Port Edwards mill since July 1960, has been promoted to technical control supervisor at that mill. He is a graduate of the University of Wisconsin.

Weyerhaeuser Names Smith Manager of Pulp Sales

Spencer M. Smith has been appointed manager of pulp sales for Weyerhaeuser Co.

With headquarters in New York, Mr. Smith will supervise pulp sales in the three regions of Weyerhaeuser's Pulp and Paperboard Division. He has served as sales manager of the eastern region.

Earlier, he was manager of pulp sales in the Midwestern region. His employment with Weyerhaeuser began at Springfield, Ore., in 1949. Mr. Smith is a graduate of Dartmouth.

Merrill D. Robison, manager of the Grays Harbor pulp mill, has been assigned to the Tacoma headquarters as assistant manager of manufacturing of the pulp and paperboard division.

Hudson Pulp & Paper Advances Four at Palatka

J. C. Cobb has joined Hudson Pulp & Paper Corp., Palatka, Fla., as superintendent, grocery bag department. A native of Leesburg, Fla., and a graduate of Georgia Institute of Technology, Mr. Cobb brings with him 11 years of experience with the Union Bag-Camp Corp.

Elton Donaldson has been promoted to tissue machine superintendent. A native of Hodge, La., he joined Hudson in October 1947, advancing to kraft paper machine tour foreman in 1951, and in 1958 was promoted to assistant kraft paper machine superintendent in the kraft paper mill.

A. M. Barnett has been made assistant kraft paper machine superintendent Mr. Barnett, a native of Tuscaloosa, Ala., joined Hudson in September 1947, advancing to kraft paper machine tour foreman in June 1952.

Cicero Sterling has advanced to kraft paper machine tour foreman, replacing Mr. Barnett. Mr. Sterling, a native of Oakdale, La., joined Hudson in September 1947.

I-P Names Sales Manager, Southern Kraft Board Div.

Appointment of Edmund B. Pettiss as manager of sales, Southern Kraft Board Division, for International Paper Co., has been announced.

The Board Division is responsible for domestic sales of linerboard, corrugating medium and various specialty boards manufactured by the company's Southern Kraft Division.

R. M. Sternberger

SFI Appoints V-P For Snowflake Division

Southwest Forest Industries has announced the appointment of Robert M. Sternberger of New York as vice president in charge of the Snowflake Pulp and Paper Division.

Mr. Sternberger's association with the pulp and paper industry dates back to 1956 when he joined the Halifax Power and Pulp Co. Since 1957 he has been vice president of Hearst Enterprises, Inc., a subsidiary of the Hearst Corp. responsible for paper procurement for the Hearst papers and management of Hearst owned paper mills.

New Officers Elected At Oshkosh Paper

R. W. O'Hara and Paul H. Salzsieder have been elected vice president and secretary, respectively, of the Oshkosh Paper Co., Oshkosh, Wis. They replace John Tauber and Louis Mueller who have retired. R. M. Shekey was re-elected president and treasurer.

J. D. G. Thomson

Northeastern Paper Sales Names Pulp Sales Head

Northeastern Paper Sales, Inc., New York, N. Y., has appointed J. D. G. (Don) Thomson to head pulp sales in Canada and the U. S. Mr. Thomson has been the firm's sales representative in New England for the last three years.

Northeastern Paper Sales is exclusive sales agent for Gaspesia Sulphite Co., Ltd., and Anglo-Newfoundland Development Co., Ltd.

Paine Named Great Northern Senior Vice Pres.

The election of Peter S. Paine as senior vice president of Great Northern Paper Co. makes an interesting follow-up to the news announcement last week of the executive realignment at New York and Pennsylvania Co. Mr. Paine has been a director of Great Northern since 1953, and a member of its executive committee since 1955. He recently resigned as chairman and president of New York and Pennsylvania to accept the position with Great Northern.

It is reported that the present GN president, M. C. McDonald, reaches retirement age this year and will be replaced by Mr. Paine.

C-Z Announces Management Promotions at Camas Mill

Two management promotions have been announced at Crown Zellerbach's Camas mill.

E. H. Nunn steps up from assistant general manager of chemical products to general manager. He started at Camas about a year ago after serving as resident manager at Carthage, N. Y. and St. Francisville, La.

R. B. Bailey now becomes assistant general manager of chemical products. He started as a research chemist engineer in 1947, working up to manager of chemical sales, a position he will combine with his new post.

P. A. Vogel

V-P of Administration Named by Fraser

Fraser Companies, Ltd., have announced the appointment of P. A. Vogel as vice president of administration of the company.

Mr. Vogel was born in Boston, Mass., where he subsequently attended the Massachusetts Institute of Technology, graduating with a B.A. in chemical engineering and business administration. He has held executive positions with Shea Chemical Corp., Allied Chemical Corp. and Underwood Corp.

R. L. Nash

Stora Kopperberg Names New Vice President

Robert L. Nash has been appointed vice president of the Stora Kopparberg Corp., New York, according to an announcement by Karl A. Clauson, president. Mr. Nash will direct sales of pulp from overseas as well as the output of the new pulp plant now being constructed by an affiliate, Nova Scotia Pulp, Ltd., on Cape Breton Island, N. S.

Mr. Nash had been eastern pulp sales manager and assistant to the vice president of the Weyerhaeuser Co. for the past two years, after having served in various other sales capacities for the previous 13 years. He joined the Weyerhaeuser organization at Everett, Wash., in 1943 after his release from the military service. He was elected president of the Pulp, Paper & Paperboard Export Ass'n. of the U. S. last year, and was also named chairman of its pulp group.

Baker Advances At Gibson

Clarence Baker, merchandising manager of Gibson Greeting Cards, Inc., has been appointed field merchandising and sales development manager.

MANILA-, SISAL-, FLAX-PULP

bleached or unbleached

COTTON AND LINEN RAG PULP

FLAX NOILS, LINEN THREADS, COTTON THREADS, RAMIE NOILS

SYNTHETIC FIBRES, GLASS FIBRES

KLAUS MECKE & CO. P. O. Box 1375, BREMEN, GERMANY

PJT NEWS OF CONVERTERS

Rapid American to Purchase Cellu-Craft

Rapid-American Corp. will purchase Cellu-Craft Products Corp., through transfer of shares of Rapid-American common stock.

Samuel J. Levy, president of Cellu-Craft, stated the acquisition will be completed before March 31. He said Rapid-American, a widely diversified company, will operate Cellu-Craft as a division. He added that he would continue as president of Cellu-Craft and Sid Luckman, would remain as vice president.

Mr. Levy and Mr. Luckman own all Cellu-Craft's outstanding stock. Cellu-Craft said 1960 sales exceeded $10 million.

Cellu-Craft, of New Hyde Park, N. Y., has plants there, in New York City and Hialeah, Fla. It specializes in packaging made of cellophane, polyethylene, acetate, glassine, paper and foil.

Rapid-American now has four divisions and a controlling interest in McCrory Corp., the retail merchandising organization. Its divisions are Rapid Electrotype Co., makers of printing plates and mats; L&C Mayers-Spors Co., catalogue mail order house; American Art Works Co., makers of metal products, and Alan Jay-Clarolyte Co., manufacturers of plastic specialities.

Johnson Named Pittsburg Plant Manager by Con. Can

F. H. Johnson has been appointed manager of Continental Can's fiber drum manufacturing plant in Pittsburg, Calif.

Mr. Johnson, who replaces the retired Paul Kreischer, was formerly plant accountant and purchasing agent.

The Pittsburg plant manufactures the Leverpak, Liquipak, Fiberpak and Stapak fiber drums, as well as a line of corrugated boxes.

Tannehill of Westab To Retire April 1

Urban Roy Tannehill, president and a director of the Western Tablet & Stationery Corp., has announced his retirement, effective April 1.

Succeeding Mr. Tannehill as president is Paul V. Allemang, who was a partner with the firm of Stevenson, Jordan & Harrison, management engineers and consultants, before joining the Westab corporation in 1957 as executive vice president. Westab recently acquired the White and Wyckoff Manufacturing Co. of Holyoke, Mass., and the Anchor Ruling Division of Bermingham & Prosser Co., Chicago.

Print the Linerboard Rollstock ...Then Fabricate the Box

Preprinted linerboard, as the name implies, is the technique of controlled printing in multi-colors on rollstock in advance of corrugated board fabrication. Electric eye equipment regulates critical cutting accuracy of finished corrugated sheets to achieve extremely close tolerances for color, slotting and folding registration.

Perfection of this technique has been several years in the making. St. Regis, the first large integrated producer in the industry to undertake the project, found the basic answers in the team work of three major divisions — Corrugated Containers, Kraft Pulp and Paper and Engineering and Machine. Specialists from these divisions, located in widely scattered sections of the country, have carefully put together the pieces in this giant jig saw puzzle over a period of the last 36 months.

Involved in the pioneering work were such basic factors as paperboard production, availability of multi-color kraft printing presses of sufficient speed to accommodate capacity of the board making machines, and special electric-eye cut-off equipment in corrugated fabricating plants to achieve the accuracy of cut-off registration required in preprinted corrugated sheets.

Preprinting has resulted in corrugated boxes of intricate design and construction in four colors, done in such a manner, however, as to create a seven-color effect. More accurate color registration is achieved, and mashing of flutes and ripple show-through are eliminated.

Initial application of linerboard production and printing was carried out at the St. Regis Pensacola (Fla.) Kraft Center, and at the Canton (Ohio) Corrugated Box Division where the printed rollstock was shipped and combined, and cut into sheets preparatory for slotting and other box making steps. Hand-built cut-off equipment was designed and built for the early Canton work. Later, the St. Regis Superior Paper Products Division, Pittsburgh, extended the research, development and sales efforts. While these steps were progressing, the Engineering and Machine Division, East Providence, R. I., was perfecting exacting cut-off equipment necessary for volume production.

Early development work was carried out by Lynn Hokenson of the Canton corrugated staff, working with specialists at the Pensacola mill, Rae C. Perkins, designer of rubber printing plates and in charge of printing for St. Regis, and Edwin E. Burroughs, designer of the Burroughs high-speed four-color kraft letter printing presses for St. Regis. Parker H. Davis, of the Superior Paper Products Division, is the general coordinator of the preprint linerboard program.

Preprinted linerboard is said to offer a customer these advantages:

- Printing with closer color register, better coverage including screen effects, color control and sharpness of detail superior to conventionally printed corrugated materials.
- Additional process colors without ink smearing.
- Better printing without sacrificing rigidity through elimination of flute crushing or rippling.
- Costs are generally competitive when advantages and quality are taken into consideration.

The preprinted method is most efficient with a minimum board production run of 20 tons—or 1,000,000 square feet. This also makes an efficient press run, particularly when four colors are printed. The Burroughs press is a 60-inch 4-color web-fed press capable of printing in $\frac{1}{8}$-inch increments, with a maximum repeat of 54 inches. It is one of the fastest kraft printing presses in the industry. Considering trim, a 60x54-inch preprinted linerboard sheet is possible.

NO "NEW IMAGE" FOR US, THANKS

Seems nowadays practically everyone talks about "changing the image," "creating a new corporate image" or "giving the product a more dynamic image."

There's no such talk around Jenkins Bros.

When it comes to valves, we're as modern as tomorrow! But when it comes to a new corporate image, no thanks. Not for us. Our corporate image is nearly 100 years old, and it still suits us just fine. Here's why:

We'll Keep our Old, 1869-Model "Image" – Our Business Friends Seem to Like It

"A Fair Offer" was first published in 1869. Simple and forthright, it said that Jenkins Bros. wanted Jenkins Valves to be judged on performance. But — and this made the difference — not on performance in the average application, but rather in the very toughest one. Note that phrase, "the worst place you can find."

To us, it just naturally figures that the product which asks for the hardest job, will also be better, longer lasting and more trouble-free in regular, run-of-the-mill applications. Makes sense, doesn't it?

At intervals we republish "A Fair Offer" just because it does make sense to so many of our customers and friends. It's a useful reminder that products may change but *high standards* never go out of style.

JENKINS®

Jenkins Bros., 100 Park Avenue, New York 17

Jenkins Bros

A FAIR OFFER

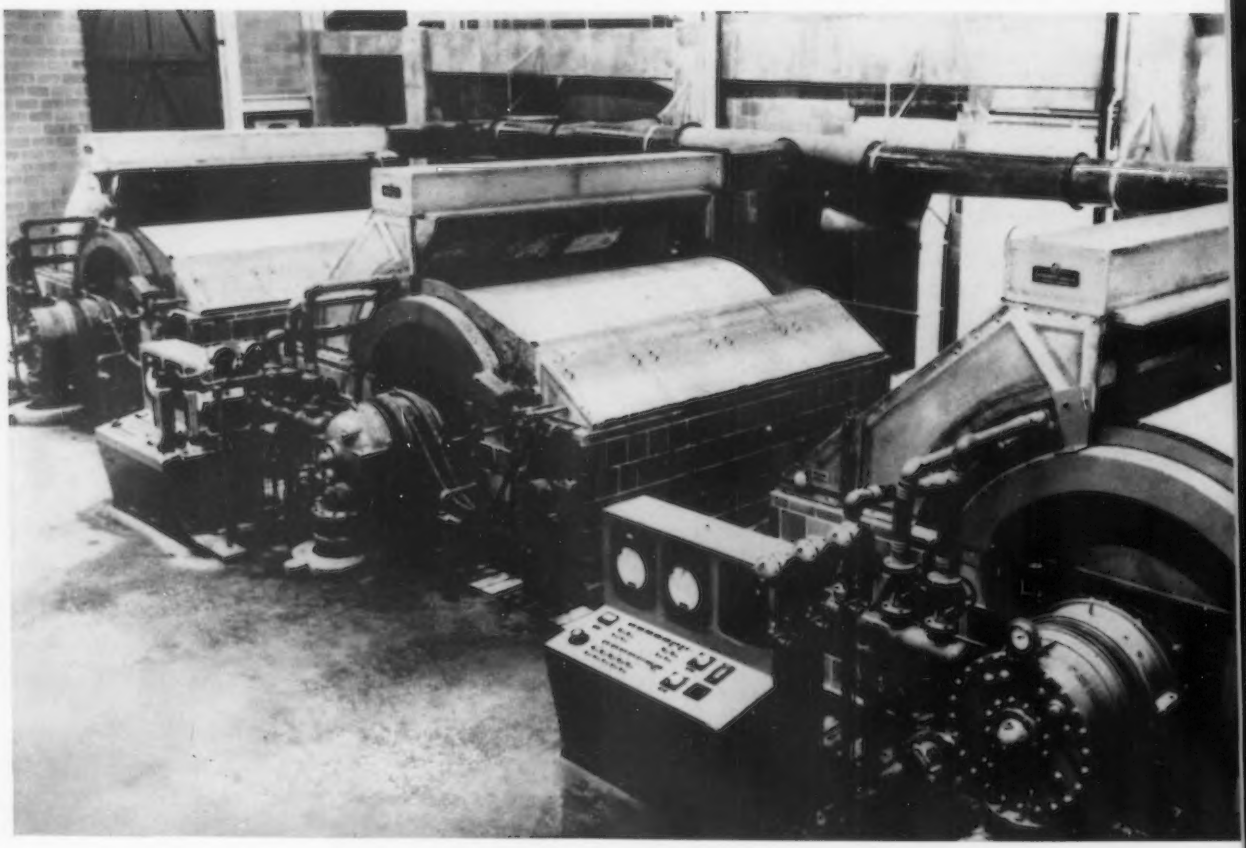
If you will put a Jenkins Valve, recommended for your particular service, on the worst place you can find . . . where you cannot keep other valves tight — and if it is not perfectly tight or it does not hold steam, oil, acids, water or other fluids longer than any other valve, you may return it and your money will be refunded.

Jenkins Bros

This early Jenkins Catalog carries the famous A FAIR OFFER which has appeared in every catalog since 1869.

Complete Dorr-Oliver Continuous BLEACHING SYSTEM

installed at
St. Lawrence Corporation, Limited



WHEN the old-established St. Lawrence Corporation, Limited decided to add a bleach plant to its newsprint and kraft liner board mill at Red Rock, Ontario, extensive investigation resulted in the choice of a Dorr-Oliver Continuous 3-Stage Bleaching System. Advantage was taken of the local engineering and manufacturing services of Dorr-Oliver's associated Canadian company, Dorr-Oliver-Long Limited, which supplied all equipment.

The washing system comprises three 8′ dia. x 12′ face washers, designed for an ultimate capacity of 200 tons per day. The first is a rubber covered chlorination washer, which includes a press roll. The second stage is the caustic extraction washer, constructed of stainless steel for possible future chlorine dioxide service. The third and final stage is a rubber covered hypochlorite washer. All washers have double roll dischargers and are in tile vats with fibreglass hoods.

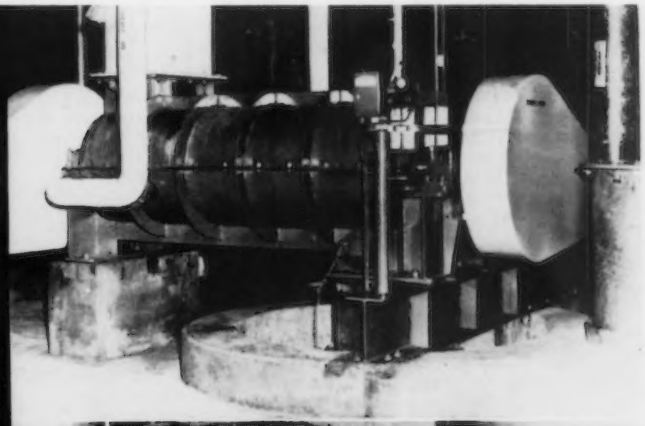
For complete coordination of all phases of the bleaching operation, choice was also made of a Dorr-Oliver rubber lined chlorine mixer, two heater mixers and circulators for the caustic and hypo towers.

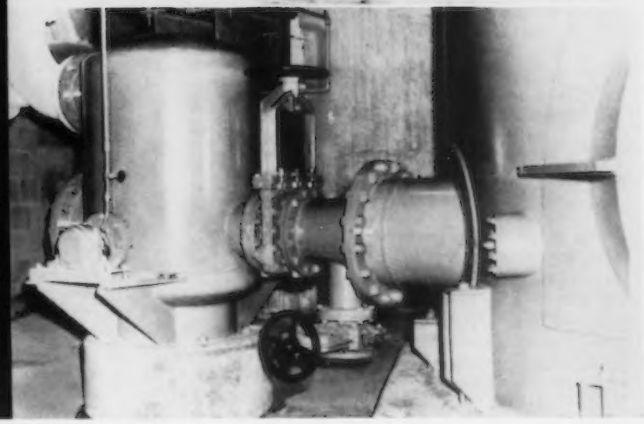
This installation is another example of the world-wide engineering and equipment service offered by Dorr-Oliver to the pulp and paper industry. Complete systems or individual equipment units can be supplied for bleach washing, brownstock washing, deckering and thickening, screening, recausticizing, sheet and board forming, fibre recovery, waste treatment and SO_2 production. For information, write Dorr-Oliver Incorporated, Stamford, Connecticut.

3-STAGE DORR-OLIVER WASHING SYSTEM installed at St. Lawrence Corporation, Limited.

HEATER MIXER (2 supplied) is 24″ diameter, with double shafts carrying alternate propelling vanes and agitating pins. This Dorr-Oliver design is recognized as the outstanding unit of its type in the field today. Reinforced shell is stainless steel.

CHLORINE MIXER has two 18″ two-bladed adjustable pitch propellers mounted on a common shaft, providing maximum agitation and intimate chlorine mixing. Glass window provides for visual inspection. Flange mounted stuffing boxes are rubber lined and rubber covered.





DORR-OLIVER

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

PJT NEW LITERATURE

Adjustable Speed Drives for Pumping Applications

Presents an informative drive selector guide for many industries, such as: sewage disposal stations, municipal water treatment stations, constant pressure pumping systems, irrigation systems, pipeline pumping, storm water pumping systems, and industrial processes as found in the chemical and pulp and paper industries. Illustrated with application diagrams, efficiency curves and mechanical features of both RectiFlow and MagnaFlow adjustable speed drives. Data 5560. Westinghouse Electric Corp. P. O. Box 2099, Pittsburgh 30, Pa.

Box Closing Reinforced Sealing Tape

Wall chart illustrates the simplicity of this single strip application. This excellent shipping room and packaging department aid measures approximately 36x24 inches and provides instructions concerning recommended storage and handling of reinforced tape. Also lists all carriers authorizing the use of reinforced tape and the appropriate Federal specification covering the product. Atlantic Gummed Paper Corp., Dept. PE, 1 Main St., Brooklyn 1, N. Y.

Compressed Air Instrument—Pure

Illustrates complete line of filters for converting regular factory compressed air to air so pure it is usable for operating pneumatic precision instruments. Also includes air regulators and air accessories. From a company noted for giving the plant man what he needs, here is a low-cost line of units that eliminate spending a lot of money. Bulletin. Don Benner, Wilkerson Corp., 1548 W. Mansfield Ave., Englewood, Colo.

DC Receivers

Tells how receivers pick up signals from transducers such as thermocouples, tachometers and pH electrodes and convert them to pneumatic or electric signals to drive a recorder pen. Ideally adapted to applications by power plants and process plants such as non-ferrous metal, pulp manufacturers and aircraft engine manufacturers. Brochure E12-4. Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio.

DeZurik Bonnetless Knife Gate Valves

Describes and illustrates DeZurik's new fab-cast bonnetless knife gate valve. Some typical applications are on fibrous, viscous, and slurry lines, crystalline and caking sludges, abrasives and corrosive materials. Gives complete information and specifications. DeZurik Corp., Sartell, Minn.

E-M Alternating Current Synchronous Generators

Describes a line of alternating current generators in ratings from 3.75 through 62.5 kva which are "non-packaged," without voltage regulators. These machines feature a heavy drip-proof frame, easy accessibility, large terminal box, pre-lubricated, "for life," bearings and end to end ventilation. Speeds available are 1000-1800 r.p.m. All standard voltages and combinations of standard voltages are available. Bulletin. Electric Machinery Mfg. Co., Minneapolis 13, Minn.

Flow Metering Applications

Illustrates and describes Dall Flow Tubes, including the new Dall Plastic Insert, Herschel Standard Venturi Tubes, Venturi Flow Nozzles and the new Plastic Parshall Flume Liner, showing their specialized applications. Line sizes are available from one inch up. Details the products suitable for the metering of water, air or gas, as well as petroleum, alkalies, acids and sewage. High pressure and temperature services are included. Bulletin: B-I-F Industries, P. O. Box 276, Providence, R. I.

Layne General Services Bulletin

Gives general facts and information on water well systems, water pumps, well drilling and allied water services and equipment for municipalities, industry and agriculture. Layne organization has been a leader in the field of ground water development since 1882, and is known the world over. Will help you with site selection, construction of water systems, maintenance, service and water treatment. Bulletin No. 10. Layne & Bowler, Inc., Memphis 8, Tenn.

"and here is where we dream up new uses for paper."

Silicones for Release Paper Coatings

Features seven new products added recently to the G-E silicones release paper coating line. Includes important technical information pertaining to the use of additives and descriptions of techniques for application and evaluation of silicone release coatings as well as tips on the care of equipment used to apply silicone coatings. Complements an earlier publication "Silicone Coatings for Paper Release Mechanisms," which deals with the chemistry of silicone release paper coatings. Bulletin S-11. Silicone Products Department of General Electric, Waterford, N. Y.

34 Sizes of Centrifugal Pumps

Describes Model 3405 line of single stage, double suction centrifugal pumps manufactured by Goulds Pumps, Inc. Thirty-four sizes now available provide capacities from 100 to 6400 g.p.m. with heads up to 525 ft., giving a choice of grease or oil lubricated bearings, wide degree of interchangeability of parts, availability in stainless steel and ductile iron. Covers complete specifications, interchangeability chart, performance curves and dimensions. Bulletin No. 721.6. Goulds Pumps, Inc., 219 Black Brook Road, Seneca Falls, N.Y.

Union Carbide Silicones

Goes into detail about what silicones are, describes their manifold uses for consumer and industrial products, and suggests ways in which they can be adapted to a host of new applications by the design engineer or product development manager. Exploratory work in the laboratories of the Silicones Division has resulted in much useful information. Booklet is graphically illustrated with photographs, charts and graphs. Silicones Div., Union Carbide Corp., 270 Park Ave., New York 17, N. Y.

Vacseal Pumps

Gives information on a complete line of solids-handling and acid pumps, the American version of the famous English Vacseal Pump which has long been a favorite in Europe and Africa. Pump has performed successfully in the most rigorous and exhaustive field tests and has proved its dependability in industry. Because of this advanced pump design, materials being pumped do not come in contact with the packing or the shaft sleeve, resulting in no leakage and greatly reduced shaft wear. Descriptive and colorful bulletin. 18 pp. The Galigher Co., 545-585 West 8th St., P. O. Box 209, Salt Lake City 10, Utah.

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In 117 large 7" x 10" pages, with dozens of charts, diagrams and tables, PULP AND PAPER MILL INSTRUMENTATION brings you full details on instruments for your mill, their selection, their use, and their maintenance.

Contents Include:

Measurement of Process Variables
Principles of Automatic Control
Kamyr Continuous Kraft Pulping
High Yield Sulphite Pulping
Chemi-Groundwood Mill
Automatic Reduction and Handling of Instrument Data
Paper and Board Mills
Kraft Pulp Mills
Sulphite Pulp Mills
Continuous Semi-Chemical Pulping
. . . and much more!

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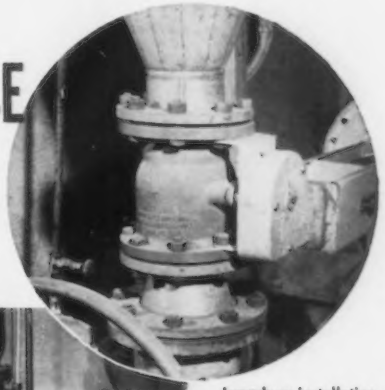

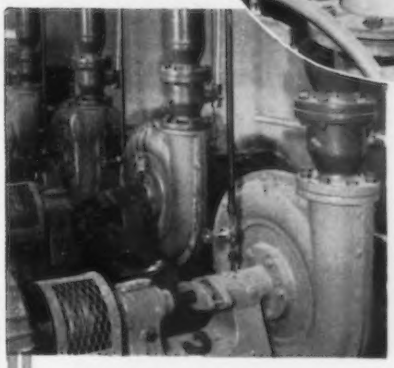

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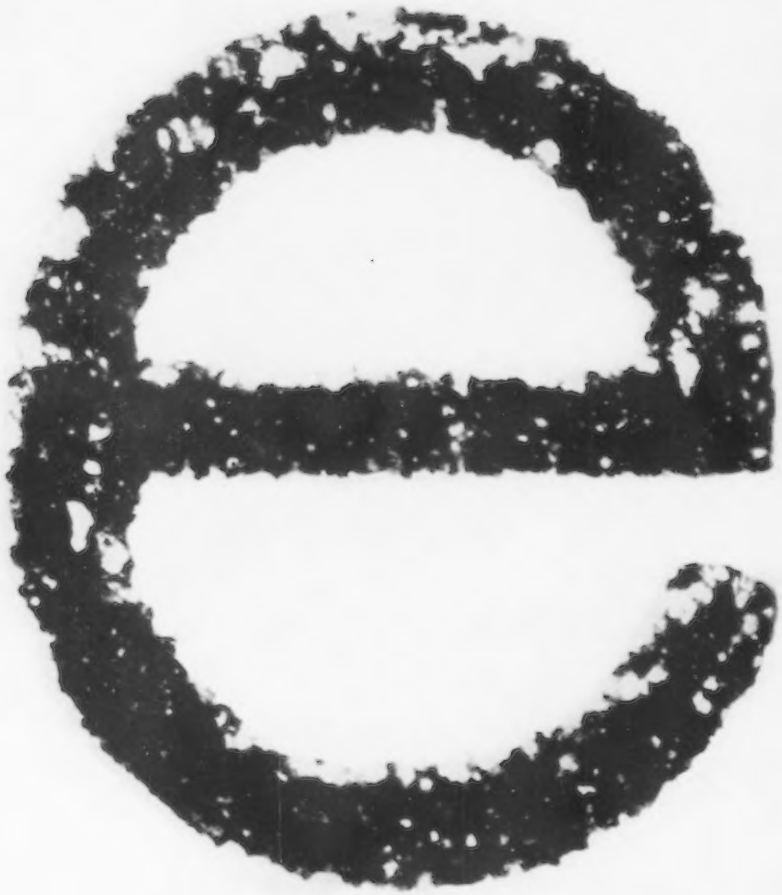

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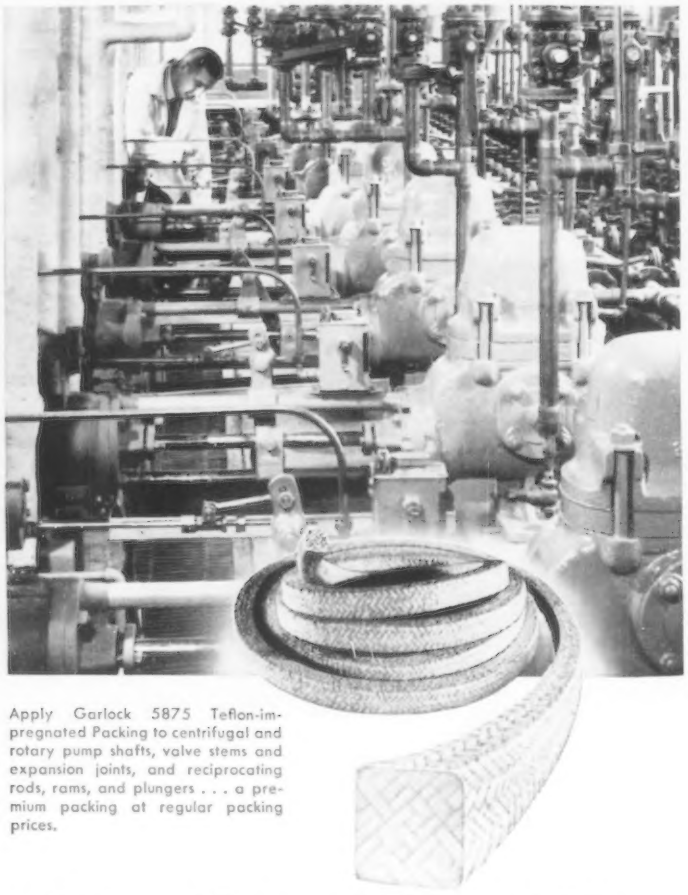

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DEFLECTOR at right directs chip flow into storage pile at Crown Zellerbach West Linn Division. Unloaded chips not sent to the mill are reverted to storage area through underground pipes. Control depot in background overlooks the dump, bin and storage pile.

West Linn's New Chip System

To diversify its wood supply, Crown Zellerbach Corp.'s 700-ton-a-day West Linn, Ore., mill has installed facilities to use purchased chips made from lumber and plywood leftovers. The new chip handling installation, designed to handle about 25,000 units of chips a year, is situated on a 100-foot bluff. The two-acre site overlooks the mill which is located on an island in the Willamette River.

This facility provides a high-capacity method for receiving, storing and reclaiming wood chips. The heart of the system is the blower and feeder manufactured by Rader Pneumatics. Designed conveying capacity is 40 units per hour. The 30-inch Rader feeder is powered by a 7½ h.p., 1800 r.p.m. motor with a 32 r.p.m. drive speed.

Chips are metered out of a receiving bin to a 50-foot conveyor, consisting of a 24-inch belt, which delivers them to the feeder. Once in the feeder, air pressure is the activating force. A switch directs the chips through a six-way valve to an eight-inch steel pipe extending across the Willamette canal to the mill proper.

If the mill is operating to capacity, the chips are blown back through underground pipes to outside storage. Deflectors at the end

CHIP UNLOADING OPERATOR Ray Watts, controls entire operation at West Linn from control depot switch panel. Michigan Payloader, Model 75A, at left, transports chips from outside storage piles to steel hopper.

KEWANEE HYDRAULIC TRUCK DUMPER can empty 13-unit chip trailers into receiving hopper in a few minutes.

of the pipes direct the chip flow to two storage piles, one for white fir and the other for hemlock chips.

A tractor unit with scoop attachment (Michigan Tractor Shovel) is used for hauling chips from the storage piles back to the hopper. All chips are transported to West Linn from saw and plywood mills in the surrounding area.

A 60-foot platform scale, capable of weighing truck loads up to 50 tons, operates adjacent to the storage zone while, nearby, a 35-foot Kewanee hydraulic truck dumper empties loads from 13-unit chip trailers into the huge steel hopper in a matter of minutes.

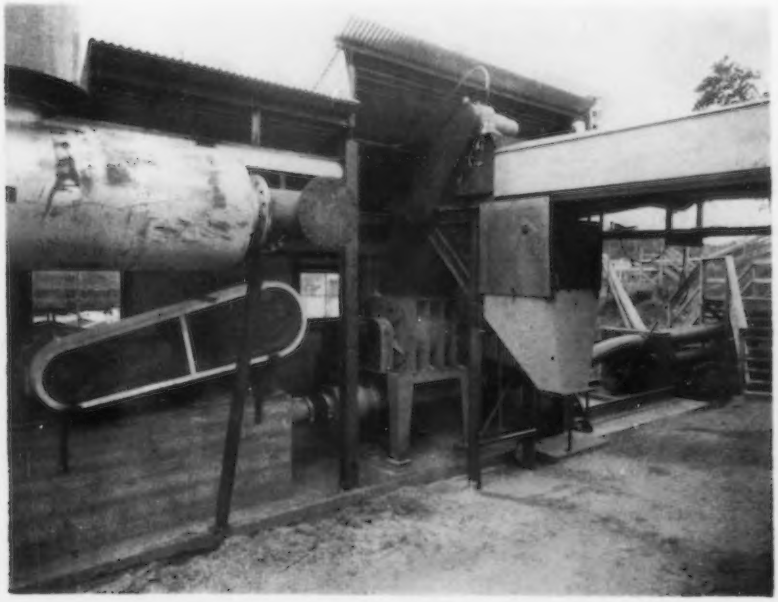
The receiving bin is capable of handling loads up to 2,000 cu. ft., and can accommodate two full trailer loads at a time. Normally, the bin empties as fast as the trailers can be brought in and dumped. The chain-type hopper bottom is powered by a 15 h.p., 1800 r.p.m. motor which has a driven speed of 15½ r.p.m. This is where chips are metered from a gate to the conveyor.

Operation of the entire system is controlled by one man from a central station overlooking the dump, bin and storage piles. In designing the facility West Linn mill engineer, J. H. Moak said, "We utilized the topography. One of the greatest advantages obtained from the side hill site was the exceptionally large hopper which the chips are dumped into from the receiving trucks.

"Because of its location, the West Linn mill has heretofore relied entirely on long logs for its wood supply. The new equipment supplements this principal source of wood fiber, and adequately solves the problem of delivering chips to the island location."

Chips used at West Linn go into the manufacture of sulphite pulp which comprises about one-third of the mill's fiber production. The balance of the mill's pulp is made from groundwood.

Crown Zellerbach was one of the pioneers in developing equipment and techniques for converting unused residuals of lumber and plywood mills into chips for pulp. Today the company's Northwest mills rely on purchased chips for substantial quantities of wood supply. The system of handling wood chips at West Linn through a series of underground pipes is one of few such operations on the Pacific Coast.



HEART OF CHIP HANDLING system is the blower and feeder. Chips are metered to feeder from the conveyor at upper right, then blown through six-way switch valve at lower right to pipes leading to outside storage of screen room.

Fine Particle Silica Pigments—II

New Additives Used for Building Desired Properties in Paper

The development of newer and better grades of printing papers seems assured by the advantages of a new pigment to improve optical properties.

M. P. Boland, L. B. Taylor, and G. B. Lagerstrom

Work undertaken by Pittsburgh Plate Glass Co., Chemical Division, indicated that an amorphous precipitated hydrated calcium silicate, Silene EF, produced an unexpected degree of improvement in optical properties of paper when used as an internal addition agent. It was also noticed that this same pigment affected the basic printing properties of these papers, especially the ink acceptance. An intensive program of laboratory and field work was undertaken which had as its objective the determination of the reasons for the effects observed, and the development of a still better pigment with optimum optical properties.

We have seen an increasing interest by the paper manufacturer in utilizing the advantages offered by siliceous pigments. Several forms of precipitated silicates and precipitated hydrated silicas as well as pigments derived from diatomaceous earth and modified clays have been tried. Such materials as Silene EF, Silene JA, other synthetic calcium and sodium alumino silicates, and Hi-Sil 411 have all been used. As can be seen from the pictures, there are often striking dissimilarities in the structures of siliceous materials: (See Figures I through IV).

Generally speaking the successful siliceous pigments tend to:

a. bulk the sheet
b. aid retention
c. soften brittle sheets
d. improve TiO_2 efficiency
e. improve ink absorption
f. improve printing cushion

Although many of these properties are difficult to measure due to the normal mill variation, it was apparent that the above effects were real. Therefore, it was clear these new pigments were not mere replacements for TiO_2, rather they were actually new additives to be used in building desired properties into a sheet.

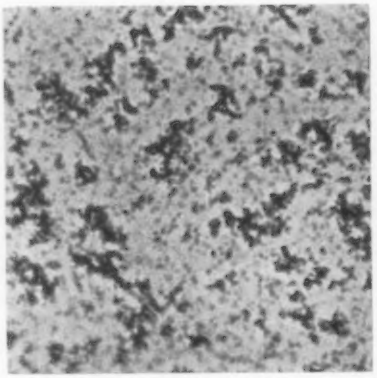


FIGURE 1—
Hi Sil 404—magnified 1000 times

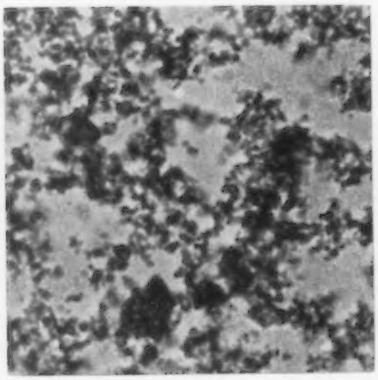


FIGURE 2—
Hi Sil 411—magnified 1000 times

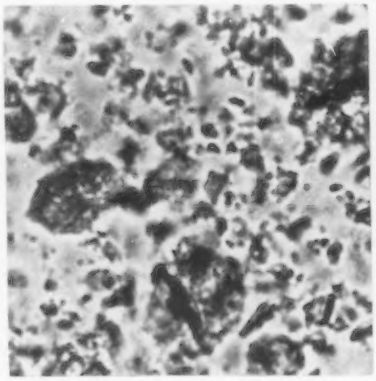


FIGURE 3—
Silene EF—magnified 1000 times

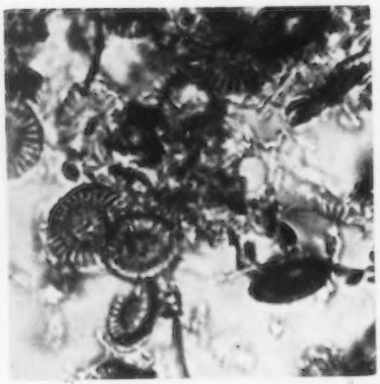


FIGURE 4—Diatomaceous earth
—magnified 1000 times

Since the main purpose achieved by a pigment in paper is to increase the opacity and brightness, and improve printing characteristics, performance is the major criterion by which fillers should be judged. Nevertheless it is important to acquaint ourselves with the physical and chemical characteristics of all the raw materials we use.

The "ideal" properties of a paper filler include the following:

Optical Performance
High whiteness
Optimum particle size
High refractive index

Operating Characteristics
Grit-free
Non-abrasive
High retention characteristics
Insoluble in water
Chemically inert

Supply
Readily available
Low price

New Siliceous Pigment

Hi-Sil 404 is a newly available synthetic precipitated siliceous pigment resulting from the research. One of its striking properties is its light scattering ability, being regarded as a near optimum in light scattering ability for a siliceous pigment. An extensive history of its effectiveness and practicability has been built up. Capacity for producing this fine new pigment has been substantially increased.

Physical and Chemical Structure

In physical structure the Hi-Sil 404 siliceous pigment is composed of aggregates of fine particles. As seen in the electron microscope (Figure 6), the ultimate particles of Hi-Sil 404 formed by precipitation are generally spherical in shape, ranging in diameter from 500-1500 Å. These ultimate particles are found in small aggregates (which under the E.M. visually resemble a grape cluster) with the most common size being below 7 microns and quite often being between 0.5 and 1.0 microns. Moreover, the general structure of these aggregates is what might be termed loose, i.e. to say they are not densely packed, but are of a type which tend to provide efficient coverage. With the ultimate particles so small, the total surface area available in this pigment is large, approximately 45 $m.^2/g$. This high surface area leads to a fairly high oil absorption capacity, and of course, excellent ink absorption.

FIGURE 5—
Wollastonite—magnified 500 times

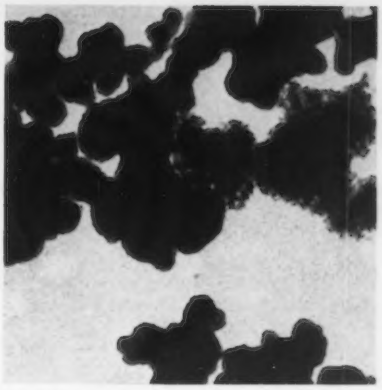


FIGURE 6—
Hi Sil 404—magnified 50,000 times.

Hi-Sil 404 is an amorphous hydrated silica which contains a small amount of Ca^{++} and traces of other metal ions. This material exhibits a marked tendency to attach to cellulose in the stock slurry. The fine pigment particles with which aluminum ion has freshly reacted provides excellent retention.

Except for the ion exchange characteristic, this pigment can be considered chemically inert in paper making. The amorphous structure holding considerable amounts of chemically combined water as well as the metal ions distinguish this pigment from any of the crystalline naturally occurring silicas or silicates, such as clays or talc type minerals. As can be seen in the electron photographs, by x-rays, and by actual performance data there is a vast difference between a material such as Hi-Sil 404 and Wollastonite, a naturally occurring calcium silicate (Figure 5).

Using the New Pigment

Use of the Hi-Sil 404 in the paper mill is generally quite simple. However, there are optimum conditions for its use. These conditions may vary somewhat from one grade of paper to another or from one mill to another depending on equipment and other factors affecting the process. Generally speaking, however, in the use of Hi-Sil 404 the preferred point of addition is at the beater or at a point equivalent to the beater. It is generally deemed desirable to mix the pigment with the pulp for as long a period as possible before the stock goes on the machine. However, even with very short periods of mixing, good retention and substantial economy can be effected.

TABLE I

Typical S_{pig} Values for Various Fillers

Pigment	S_{pig} (Average)[1]
Clay	0.20
Calcium silicate, I	0.23
Diatomaceous Earth	0.34
Silene EF (calcium silicate)	0.34
Hydrated Sodium Silico Aluminate	0.36
Silene JA (calcium silicate)	0.39
Hi-Sil 411	0.42
Hi-Sil 404	0.52
TiO_2	0.76

[1]Average value by the test described in Paper I. **(1)**

Typical Results

Table I presents typical specific light scattering coefficients (S_{pig} values) for a group of materials as determined by the laboratory evaluation method described in the first paper of this series **(1)**. We feel that these values present a valid comparison, which has been borne out by field experience as well as by the laboratory evaluations. The performance of our own products, Silene EF, Silene JA, Hi-Sil 411, and Hi-Sil 404 bears out the validity of comparisons based upon these values. For example, one pound of Hi-Sil 404 is as effective as two pounds of Silene EF in most applications. (Silene EF[2,3] was effective enough to be used extensively in a number of grades several years ago.) Hi-Sil 404, thus, is proving to be the outstanding siliceous pigment available to the paper manufacturer.

In Table II we see the results obtained by the use of Hi-Sil 404 in a groundwood-sulphite furnish. As can be seen, improvements of up to five points in brightness and 3-4 points of opacity in the 90+ range were ob-

TABLE II

Effect of Hi-Sil X404 in Newsprint Furnish

Pigment Content	Ash %	Brtns., W.	% F.	Opacity, % B & L	Show-Through[1] Resistance
Control (No Pigment)	0.45	58.4	57.0	91.5	89.0
4% Hi-Sil 404	3.25	59.1	59.8	94.0	95.0
9% Hi-Sil 404	6.22	63.0	62.9	95.0	96.0

[1]B & L reading brought to 100 for unprinted areas (both sides) with unprinted backing; then unprinted area with solid black print on reverse side was tested with same backing to give show through.

tained by the use of this pigment. Outstanding results are exhibited in the show-through resistance. The show-through resistance was improved from 89 per cent to 96 per cent.

Table III shows the results obtained with commercial grade papers using Hi-Sil 404. The first sample cited is a bond paper. In this particular case the titanium dioxide content of the regular furnish was completely replaced by Hi-Sil 404. The replacement ratio was 1.6:1, resulting in a slightly higher ash content. However, as will be noted a marked improvement in the opacity resulted. This was due primarily to the outstanding performance of the pigment. However, a portion of the gain was due to the increased effectiveness of the dyes used, which resulted in a slightly lower brightness, thereby enhancing the opacity. The use of less dye would have permitted a higher brightness with a small corresponding drop in opacity.

The second section of this table presents the results obtained in a run with coated paper containing Hi-Sil 404 in the body stock. Tests were run not only on the body stock but also on the coated paper and the super-calendered coated paper. As can be seen, marked improvement in the opacity and brightness of these sheets resulted. The printing tests indicated clearly that a marked tendency toward ink holdout was noted in the Hi-Sil 404 paper as opposed to the regular sheet not containing Hi-Sil 404.

Theory

We may ask ourselves why the results obtained with the bulking type of siliceous pigments are so good. Why is it that a pigment with an index of refraction of 1.49 give results of this type? The answer is a complex one and appears to involve many factors, the major ones of which include:

1. In Hi-Sil 404 the direct light scattering by the pigment is high due to a favorable combination of ultimate particle size and aggregate size. Thus due to its structure, we get an unusually high light scattering for the amount of material present. It seems desirable to point out to those who are concerned by the low index of refraction, that the low density of silica and silicates permit them to occupy even in solid form twice the volume which denser substances can occupy. Therefore, when in a suitable aggregated fine particle pigmentary form they can present a much greater area for light scattering than a similar weight of denser pigments.

2. The latent light scattering ability of the pulp is developed by the aggregated type of pigment. The major contribution comes not by interference with the fiber to fiber strength bonds, but by maximum use of the fibrillated material found in the interstices between the fibers and attached to the fibers themselves.

TABLE III

Commercial Grade Papers Containing Siliceous Pigments

Typical Loadings	Basis Wt., lbs./ream	Ash, %	Brtn's., %	Opacity, %
Bond Paper				
Regular	20.2	6.9	81.8	86.2
Containing Hi-Sil 404	20.4	9.2	80.1	89.4
	20.3	8.7	79.9	89.9
Coated Book				
Regular Body Stock	28		62.4	83.8
Regular Body Stock coated to	40		68.7	92.4
Regular Body Stock coated to	40	(Super-calendered)	66.5	90.7
Hi-Sil 404 Body Stock	28		66.9	87.0
Hi-Sil 404 Body Stock coated to	40		71.8	94.4
Hi-Sil 404 Body Stock coated to	40	(Super-calendered)	69.0	92.5

Summary

The economic advantages of using Hi-Sil 404 to gain in optical properties are quite evident. Another advantage of great importance can be found in its improvement of printing qualities, although it is more difficult to assign a definite economic value to this improvement. The development of newer and better grades of printing papers employing Hi-Sil 404 seems to be assured. Meantime the rapid exploitation of the optical properties of this new pigment will make its use and properties well known in the near future.

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New Coating Resin Has Exceptional Barrier Properties

. . . and that isn't all! A water system emulsion, it is suitable for on-machine coating and forms a continuous film which is extremely inert and completely insoluble.

P. D. Van Derveer,
Associate Editor,
Paper Trade Journal

For years chemists have tried to develop a method of incorporating an exceptional polymer known as polyvinylidene chloride into an emulsion or latex system. Most familiar in its unsupported film form under the trade name "Saran," the polymer has outstanding properties of toughness, flexibility clarity and chemical inertness, yet is both expensive and difficult to combine with paper in this form. Until recently all efforts to incorporate polyvinylidene chloride into an emulsion or latex system has resulted in materials lacking in one or more of the necessary properties.

Last spring National Starch announced the development of its new Resyn 3600, a workable water base system containing polyvinylidene chloride, suitable for on-machine coating applications and producing end properties equivalent to those obtained from the free film. Some of the key features of Resyn 3600 coatings are: unusually low water vapor transmission rate; excellent barrier to permeation by organic vapors and gases such as oxygen, nitrogen and carbon dioxide; exceptional chemical resistance to strong acids, alkalies and most solvents; nonflammability; and extreme oil and grease resistance.

Just recently PAPER TRADE JOURNAL had the opportunity to interview two of the chief architects behind the development of this new product. One was Leonard J. Wood, product manager of National Starch's paper division, and the other, Donald S. Greif, director of coating applications. Presented here is a question and answer session with these two men to bring our readers up-to-date on the latest developments with this startling new product.

L. J. Wood,
product manager of paper division

D. S. Greif,
director of coating applications

Stability Key to High Speed

Q. How does Resyn 3600 differ from other products on the market containing polyvinylidene chloride?

A. Ours is the first stable polyvinylidene chloride (PViC) resin available to the paper industry. Stable is the key word because, while other PViC resins have been available, they had minimum shelf life and minimum mechanical stability, meaning that they were unsuitable for the high speed coating equipment used in America.

Our system of copolymerization and techniques of manufacture are the key to the new resin's shelf life and mechanical stability.

Q. Has this new product been available yet commercially?

A. Our new prime polymer manufacturing plant at Meridosia, Ill., is now on stream, producing the new resin efficiently and with a high degree of uniformity. Until about a month ago Resyn 3600 was produced only from pilot plant facilities which were not able to keep up with orders from customers for mill trials.

Now that our new plant is in commercial production, we can provide almost unlimited quantities. The Meridosia plant's design is such that it will initially produce 14 million pounds per year and later can be expanded to at least double that capacity in a short time.

Q. Why is polyvinylidene chloride and more specifically Resyn 3600 preferable for paper coating purposes to other types of resins?

A. Resyn 3600 has the basic capability of forming, from a water base and without plasticizers, a film comparable to free films of PViC copolymer. It is unique in that it can be used easily on the paper machine and will form films which are non-blocking and which possess properties of the free film such as Saran.

Plasticizers are not needed to give the film continuity, and therefore the characteristics of maximum resistance to chemical, moisture, vapor, and gas permeability inherent in PViC copolymers can be maintained. Because of its tremendous inertness and complete insolubility, this is the very best resin for applications requiring these qualities. It is outstanding in all properties, and now with Resyn 3600 you can get whatever properties desired by varying the coating weight. No other commercial polymer system has these basic characteristics.

Versatile Tool for Upgrading Paper

Q. What are some of the applications for your new resin?

A. Well, of course, any paper or board product that requires upgrading of barrier properties or exceptional chemical resistance can be improved by coating with this resin. It offers the paper industry a product with which competition from plastics can be met. The properties of the Resyn 3600 coating can be varied so that with this one product mills can provide a paper or board material with a great variety of properties.

Some of the applications where it has already been shown to be a versatile tool for the marriage of plastics and paper are: coating for functional boxboard grades, chemically resistant coating, vapor barrier for flexible packaging, frozen food wrap, fiber drum linings, heat sealable pouch paper, liquid food containers, paper cup coatings and vapor barrier for board products.

Incidentally, an interesting sidelight to these applications is that it has been used as a flame retardant spray for trees which also effectively retards moisture expiration. This is useful in keeping the needles on Xmas trees and in transplanting. It doesn't hinder growth, but prevents loss of moisture and gives the roots a chance to take hold.

Q. What methods are used to apply Resyn 3600 to paper or board?

A. Either on-machine or off-machine coaters can be utilized. National Starch feels that the most effective method is by means of the air knife. A great deal of basic work in evaluating the properties of Resyn 3600 has been done both here in our labs and in various paper mills using the air knife. Recent investigations have illustrated the suitability of the reverse roll, wire wound bar and gravure coating methods.

The resin has great potential, but the coating technique should be such as to keep the PViC at the surface in order to permit continuous film formation. There is still some work needed to adapt the resin to various coating methods, but it has fewer problems than other materials.

Preparation of Base Paper Important

Q. What is the importance of the substrate?

A. The more that is done to the substrate to provide holdout, the better the economics. The key to obtaining a good, continuous coating lies in the preparation of the base paper. A surface that will hold out the coating is important. With a relatively impervious surface as little as 2-3 lbs. of Resyn 3600 per 3000 square feet will provide remarkable improvement. As you go to coarser or more absorbent substrates, higher 3600 coat weights (8-12 lbs. per ream) are required to form a continuous film. However, we have been able to put a holdout coating on most any substrate.

Q. Do you have any recommendations as to where on the paper machine the coating might be applied? For instance at the size press or calenders.

A. Investigation of size press and calender applications are underway. It's applicable for on-machine coating although most of the initial work was done off-machine. The material has been run on-machine by the air knife, Champion coater and wire wound bar coater.

Q. Are any modifications of equipment needed?

A. Most important in this respect is the fact that resin emulsions contain small amounts of volatile monomers which can swell non-chemical resistant rubber. Dried films of Resyn 3600 are hard to remove except by use of solvents which will also be solvents for non-chemical resistant rubber. We recommend wherever possible that stainless steel be used, and that highly chemical resistant rubber be used for rubber rotors or rubber stators such as in Moyno pumps. Incidentally, films of Resyn 3600 on metal can be stripped off or cleaned with suitable solvents.

Q. What type of pumping equipment should be used?

A. Well, the resin emulsion industry utilizes pumps which do not involve pumping through small clearances and won't generate or introduce air. Open impeller centrifugal pumps with water purged seals are widely used.

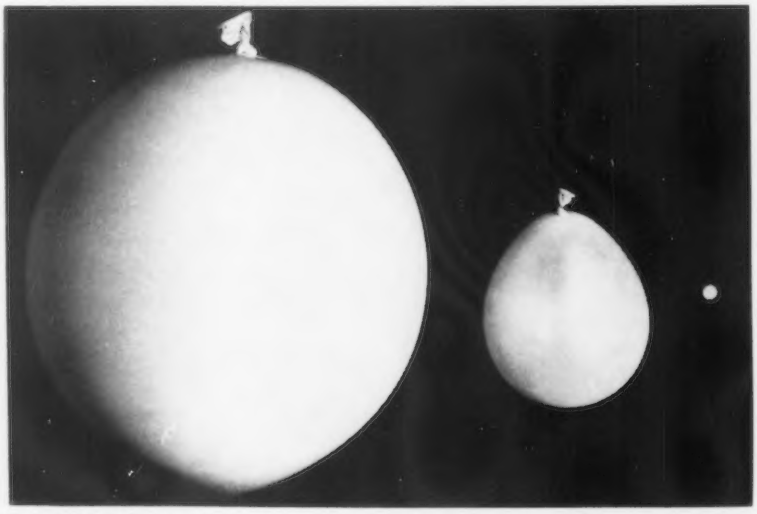
The use of non-chemical resistant rubber stators in Moyno type pumps is not recommended because of swelling. Small clearances between the stator and rotor result with the consequent generation of excess heat. This may dry the resin, causing buildup and possible pump stoppage. For these reasons the pump stator should be either stainless steel or highly chemical resistant rubber.

The resin is mechanically stable, but normal precautions must be taken to prevent stagnant areas in coating pans and supply tanks where drying out of the surface film could cause skinning and grit in the coating.

Most Drying Methods Suitable

Q. What about drying methods?

A. A drying technique that is very fast without boiling the coating and



TINY BALLOON at right illustrates Resyn 3600's great resistance to transmission of gases. Balloons represent amount of gas passing through 100 square inch area of three films in 24 hour period. Large balloon represents gas permeability of polyethylene, center balloon is for polyvinyl acetate.

creating gas bubbles is most effective. Almost any kind of drying method is perfectly suitable as long as you prevent overdrying or underdrying. You should also avoid drying the coating with moisture underneath. It is also beneficial to avoid preferentially drying the outer surface of the coating, but instead to dry from within. Infra-red drying shows a good deal of initial promise.

Q. Is there any need for Teflon coated dryers?

A. We can say in this respect that there is little tendency for this coating to adhere to dryers when its surface is reasonably dry. Teflon coated dryers would serve as a safety measure against having moist coating contact a dryer.

Q. Can a sheet, coated with the new resin and dried, be repulped?

A. The material is not effectively repulpable. It would be handled in essentially the same way as polyethylene coated board so that about 80 per cent of the fiber could be recovered.

There are some advantages in this regard accruing to the use of Resyn 3600, however. Even though the material does not disperse, neither does it form a mucilaginous mass. If it should be broken up in a waste paper furnish, it wouldn't stick to the paper machine wire, presses and dryers or clog screens. In other words it will run through the system without difficulty other than its appearance in the finished sheet.

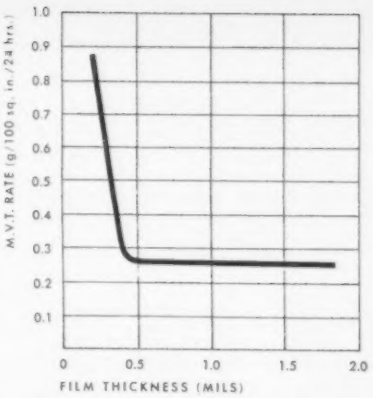
Q. In what form is Resyn 3600 supplied and how is it formulated?

A. It is supplied as a 50 per cent solids latex of water thin viscosity. For many surfaces, it is ready for use as supplied, but for some uses it is necessary that the latex be thickened. A number of thickeners may be utilized, but one of the best is polyvinyl alcohol or its equivalent.

The technique of thickening Resyn 3600 is important in order to maintain optimum film properties. The technique is to thicken a portion of Resyn 3600 by the addition of 5% polyvinyl alcohol, then to follow this by the careful addition of unthickened Resyn 3600 until the desired viscosity is reached.

We will undoubtedly have greater knowledge of thickening methods in another six months, but we have worked out this basic method to economically control viscosity.

Q. How does the use of pigments affect the coating?



WATER VAPOR transmission rates for Resyn 3600 coatings on unbleached kraft.

A. Formulating other materials into the PViC coating will reduce its basic properties. Like any other barrier film, pigments tend to disrupt film continuity.

Q. Can you give any indication as to the cost of coating with Resyn 3600?

A. We have, of course, carefully investigated the cost aspect and as an example, we applied in trial runs a standard 6 lb. hold-out coat by a conventional roll coater followed by an air knife application of 7 lbs., per 3000 square feet of PViC. Using figures supplied to us by a large paper producer we approximated the average cost of a full scale coating operation.

The total raw material cost including the undercoat was $48 per ton, and the application cost for on-machine coating was $30 per ton for a total coating cost of $78 per ton. These figures showed a 25 per cent cost advantage over polyethylene extrusion coated board of the same weight. Of course other mill's calculations would probably differ from these, but comparative costs should remain proportional.

Converters Use Existing Equipment

Q. If converters wanted to use this resin, would they have to invest in special off-machine coating equipment?

A. No, not necessarily! While this material may be applied with conventional coating equipment on the paper machine, successful applications have also been made with existing equipment at converting plants. The coating has been applied with waxing equipment utilizing wire wound doctor rods, gravure printing presses and flexographic presses. With six or eight station Champlain presses, several colors can be put on the base sheet at the same time as two coats of PViC. Many jobs may be met very satisfactorily with existing equipment or with slight modifications. Incidentally, Resyn 3600 does away with the need for a solvent recovery system.

Although on-machine applications of course have the advantage of a one process operation, it may actually be more economical for the converter to put the coating on with his own equipment.

Q. What about printing on a PViC surface?

A. Several flexographic and gravure inks currently in use are suitable for PViC. There has been much less difficulty in printing PViC than with other types of film, such as polyethylene for instance.

Common letterpress and offset inks have exhibited slow drying properties on PViC coatings. However, new inks have already been developed to offset this tendency.

Q. Does folding affect the PViC coating?

A. To some extent it does. We feel that an application of at least 8 lbs. per 3000 square feet is necessary to maintain the coating's function on a fold or score line.

Q. Are there any problems in gluing PViC coated board?

A. Normal resin adhesives will adhere PViC coated board face to back, but since the adhesive will not penetrate the coated surface it only has one surface available to transfer moisture. Hence drying or setting times tend to be longer.

Manufacturer's joints, bag bottoms and seams, and straight line glue areas where there is sufficient compression time offer no difficulty in gluing.

However, for certain high speed closure operations where faster compression times are needed, modification of the adhesive may be necessary. This presents no real problem since faster setting adhesives can be supplied by National Starch or other adhesive manufacturers as a specific need arises.

How to Trouble Shoot At the Fourdrinier Wet End

Designed specially to assist the young control engineer or technical department employee in solving wet end problems this article makes interesting and enlightening reading for everyone concerned with paper machine operation.

This article is taken from a forthcoming monograph entitled "On Fourdrinier Machine Wet Ends" to be published this spring by Paper Trade Journal. The book was written specifically as an introduction to papermaking for young engineers and other technical men new to the industry. However, the reaction by our readers to the chapters published in this magazine indicate a much wider interest than just to new men in the industry.

When a fast running paper machine gets into a mess, the effect—physical and mental—on the operators can be most sorrowful. A typical consequence is that the percentage of broke starts building up for some unknown reason. This upsets basis weight control, freeness, color, ash content, opacity and drying. Corrective measures do not eliminate the original trouble but contribute to throwing the machine further off its old tracks. Finally just about everything has been changed, no one knows what does what, the results are worse than ever and it is decided to set the machine right back where it used to be. When this has been done it is found that the machine runs reasonably well. Nothing has been achieved or learned. The young technician or chemist, who is drawn into the swirl of such an event is strongly advised to desist to the limits of insubordination from any complicity.

Improved methods of machine operation are never stumbled upon unless it is a matter of some major error made by the operators, which suddenly reveals itself. The proper approach of the technician and the chemist should be to study the processes systematically, to map, measure and record everything that can have a bearing on machine performance and paper quality and, when troubles occur, to survey again all these things to find what has in fact happened.

Such trouble shooting, however, encompasses so many interweaving activities that it is just about impossible to draw up a logical plan for it. This article should therefore be looked upon merely as a collection—by no means complete—of advice on various problems around the wet end.

Mass and Flow Balances

Always start work on a new machine by preparing balances for the flow of water, fiber and filler. This is not a very glamorous job but it provides an absolutely necessary knowledge of the machine, that cannot be had without going to this trouble. If it should appear that sampling taps or means for measuring flows are missing, these deficiencies should be rectified. When trouble comes, it is necessary both to be able to check up on conditions without delay and to know what should be a normal result. This especially holds for all the additions of white or fresh water to the paper machine. If the flow of water to all spray pipes, showers and seals could be read on rotameters a lot of trouble would never occur.

On the basis of these balances calculate how much water enters the system and make sure that you can account for it all leaving. Trouble can be expected if the excess white water leaves the system now at one place, now at another, and the ideal is to have just one easily accessible and automatically recorded overflow. Where the white water system is very closed, trouble can be caused by too high a level of fines or pitch particles in the white water and when a suggestion to that effect is raised by the papermaker, the mill chemist should be able to confirm or refute the suspicion at once or much valuable time will be lost.

Sometimes, when two-sidedness or other printability problems are acute, the retention of filler is brought up and the mill chemist is well advised to know, at such an occasion, just what used to be normal retention along the fourdrinier, what the ash content should be in the white water all through the system and how much filler is lost at the different points of overflow.

Consistency Control

Make it a rule to check the consistency regulators at least once a year. Have them cleaned and reconditioned if needed and then watch their operation closely—especially if they are not recording. The regulators should operate all the time, that is, the control valves must not stay for any length of time in the extreme positions. This may sometimes happen for example when a chest is emptied or when a beater is dumped with too little water. A consistency peak that passes through a stock chest because the control valve for dilution water is too small or the response of the regulator too slow is

quite capable of causing a break at the couch or at the presses.

We are not directly concerned here with the installation of consistency regulators, so it will only be remarked that the flow of stock to the regulator, the point of addition of dilution water, the mixing in of this water and the reset of the regulator are all factors that should be reviewed regularly with regard to possible changes to the white water system since the regulators were first installed. Only when the regulators and their installation have been checked as described is it worth while to take consistency samples and determine actual variations. If series of ten samples are taken with intervals of one and five minutes and the coefficients of variation are calculated a good idea is obtained of the functioning of the controllers. The coefficients should be of the order of two per cent, but what is actually obtainable depends on local conditions. If in connection with basis weight trouble the performance of some regulator should be questioned, it is invaluable to have at hand a record of normal conditions after each regulator. Such records of coefficients of variation cannot be replaced by the charts of recording consistency regulators, even if these are most valuable to the operators.

There are several reasons why consistency control should be of so great concern to us apart from its obvious connection with basis weight control.

1. When broke and different types of pulp are to be mixed in fixed proportions it is not sufficient to have reliable and accurate flow meters. If, for example, newsprint is made with 10-20 per cent chemical pulp, even a slight drop in groundwood consistency will automatically result in an increased percentage of chemical pulp in the paper. Unsatisfactory control of broke consistency is a common reason for freeness variations on the paper machine.

2. Poor consistency control will affect beating and thereby both freeness and strength properties. If, however, blending in the machine chest or other factors insure a satisfactory basis weight control, the poor consistency control ahead of the beaters may not be detected and associated with the drainage variations on the wire.

3. Basis weight control may be considered satisfactory—mainly because it is no worse than it used to be—and it may still be possible to achieve highly worthwhile improvements by paying some attention to the consistency regulators.

4. A sudden marked increase or drop in basis weight of short duration is very difficult to detect because the sheet usually breaks at the couch. Even when no break occurs, betagauges and vacuum recorders may be too slow to record the phenomenon. If, however, the trouble comes from the regulators or originates ahead of these, it can be detected and corrected at the regulators.

Stock Metering

Stock metering is very difficult to check, especially if flow meters of electromagnetic type or rotasleeves are used. Still, the control engineer must satisfy himself that the flow meters are giving the desired proportions of various pulps. The only safe method known is to run the flow meters during down time, recording the change in level in some stock chest with time. Where stuff boxes are used the only thing one can do is to ensure that the level is constant in the box and that the air content of the stock is low and constant. Problems connected with the stock valve have been dealt with earlier.

Freeness Control

When refining equipment receives a constant, steady flow of stock of uniform consistency, attention can be given to stock preparation control. Without these prerequisites control will be a futile effort, which may even have harmful effects. Check the efficiency of each piece of refining equipment by analysing representative samples taken before and after each unit for freeness, fiber length and strength. These data will become a most valuable background information in case of trouble on the machine. If freeness is not analysed regularly after refining, have this done for a week in order to determine the level of normal freeness variations. Ideally, refining equipment should be set to the obtained freeness results thereby maintaining freeness within narrow limits. If this is considered too expensive at least try to institute the practice during periods of operating trouble. Machine trouble will result in increased broke production and variations in broke percentage and even if freeness control is good under normal conditions, it is apt to get out of hand during periods of breaks.

Sometimes refiners are equipped with regulators, which maintain a constant load on the motors. This may result in more uniform beating but the regulators cannot correct for changes in pulp quality. The need for freeness testing will therefore still exist. In some cases the refining load is controlled automatically to maintain a constant vacuum at the coach. This is all right as long as the basis weight does not fluctuate.

Even if the refiners deliver stock of uniform freeness, drainage troubles may occur on the machine if the savealls are not operating properly. This is especially apt to happen when the break frequency is abnormal and the white water becomes rich. During these periods attention is often so focused on the paper machine that no one notices what goes on at the savealls. It is advisable to check all flows, consistencies and ash percentages around the savealls both during normal operation and during periods of wet end breaks. Sometimes a careful study of the flow balance of the paper machine will reveal means of reducing the fiber content of the white water going to the savealls. Care should be taken to avoid fluctuations in the flow of reclaimed stock to the paper machine. The situation becomes even more dangerous, however, if an upset saveall results in a marked increase of solids in the clarified white water going to the wire showers. Within a few minutes some holes in a shower pipe may plug, stock accumulate on an inside wire roll and a ridge appear in the wire.

Since there are many types of savealls built on entirely different principles no specific advice can be given here. Quite in general, however, it can be said that whether a saveall is good or bad a competent mill chemist can do a lot to improve its efficiency and dependability. Also this is a field, where his work will be very little interfered with.

Batch beating in hollander type beaters poses different problems. Usually the beaters are too small and the beating time too short to allow freeness control by usual testing

"Improved methods of machine operation are never stumbled upon unless it is a matter of some major error made by the operators, which suddenly reveals itself."

methods. Beating, therefore, is done on a time schedule under accurately controlled load. Every time roll or bedplates are changed, it will be necessary to reestablish by special investigations what beating time and load are needed for a given beating effect. Of course, the bars have to be worn in before this investigation can be carried out.

Freeness of ground wood pulp is controlled at the grinders, and no corrective measures can be taken at the beater room unless one has means for fractionation of groundwood pulp and controlled mixing of the fractions. This is nowadays quite feasible and may one day become normal practice.

Level Control

When trouble occurs on the paper machine a good habit is to check on levels in broke chest, machine chest, white water pit, seal pit and couch pit. If these are not all equipped with recording level controllers a transient change in level at some point in the white water system may very well pass unnoticed and cause perplexing difficulties on the machine. A drop in level at the white water pit can be very dangerous because of its effect on fan pump pressure and consistency. A fluctuating level in the machine chest upsets the proportion between fiber and whatever additives are metered into the chest. Depending on local conditions, such a fluctuation is also likely to affect consistency and freeness after machine jordans (where recirculation is heavy). More or less, every fluctuation in level, white water overflow or fresh water intake into the system will upset the balance and cause operating or quality troubles.

Although it is normally the machine operators job to maintain proper level control, the technician may have to come to their help in pinpointing the trouble and demonstrating its effect on operation or paper quality. If detailed mass and flow balances have been prepared in advance, this job will be very much easier.

Slime Control

With regard to slime there are on a paper machine five possibilities: slime, and breaks caused by slime; slime, and breaks not caused by slime; slime, and no breaks; no slime but many breaks; and no slime and no breaks. The mill chemist should satisfy himself—without listening to the opinions of the operators—to what category each paper machine belongs. This is by no means easy. If the "ends" from a break can be recovered, they can be tested with a reagent for protein, but the method is not very reliable. Just from the look of it, it is very difficult to say if a "slime" hole was caused by bacteriological slime or just by an accumulation of fiber and fines.

"A consistency peak that passes through the stock chest because the dilution valve is too small or the regulator too slow may cause breaks at the couches or presses."

The most reliable method of estimating how many of the wet end breaks were caused by slime is a statistical study of breaks caused by unknown factors before and after clean up. Slime growth in the system can be evaluated by scraping off and weighing the slime deposited on special slime boards installed in a small box through which white water flows at a constant rate. The method is laborious and few control departments can afford to maintain such testing on a routine basis. Also, one cannot always rely on having a correlation between slime growth on the boards and in the white water system.

It is, therefore, safer to pick a couple of spots in the system, where slime growth can be easily observed and to use these spots as indications of the slime condition. It should be realized, however, that especially fast running paper machines may suffer from slime breaks even when there are no visible slime deposits in flumes and piping.

A little slime accumulated in some pocket of the headbox may suffice. Many cases of slime trouble can be explained by poor condition or operation of the machine screens, and it is most important to be able to distinguish between such troubles and genuine slime troubles. The operation of machine screens has been treated in Chapter 1.

Slime growth can be fought by chlorination of the white water, a method that can be quite effective provided enough chlorine is added to maintain a surplus. Where much groundwood is present, however, chlorine is consumed too rapidly to make the method economical. There are also a number of slimicides available for killing off the slime, and the methods of using them are well developed. Slimicides often represent a considerable cost, especially since the papermaker is inclined to use an excess in order to play safe. To avoid this, the mill chemist can test the concentration of mercury (if phenol mercury acetates are used) in the white water or even check on the concentration of bacteria. Both methods are time consuming if they are to be kept up as routine tests. The most practical approach is believed to be to add and remove slimicides systematically while observing the results on the paper machine. Statistical methods must be used to estimate the effect of slimicides on the break frequency. Such work can result in considerable savings as well as improved machine operation. Unfortunately, the cooperation between paper mill and control department necessary for such a program may not always be at hand.

A well-organized system of efficient washups may sometimes suffice to keep the slime growth under control. This calls for a piping system such that a solution of hot alkali and slimicides can be circulated through all pipes, pumps, stuff boxes and tanks without a need for emptying the machine chest. Especially on old machines it sometimes pays to go over the system and eliminate obvious slime traps like oversized pipe lines, recirculation lines, wooden tanks and flumes.

Pitch Control

Pitch troubles are—as a rule—easier to explore than slime troubles. If pitch deposits in the wire, on flat box covers or on press rolls this is easy to detect and there will be no uncertainty about the effect on machine operation. The mill chemist is therefore faced with the straightforward problem of eliminating the deposits. This job is conveniently started by a survey of chloroform extracts of the pulps used, of the white water at various places in the white water system, of the shavings from the press roll doctors and of stock and foam floating on top of flumes, chests and headbox. If the problem is a serious one, a method for evaluation of injurious pitch should be worked out. By such a method only that pitch is obtained that is in a state allowing it to deposit on machine parts. The injurious pitch constitutes an infinitesimal part of the total pitch content and it

is all but impossible to determine the exact quantity of it in pulp since the figures obtained depend entirely on the method used for collecting it. Furthermore, the physical properties of this "injurious pitch" are more important than the quantity of it. However, when one wants to estimate the effect of various factors on the proneness of pitch to deposit on a certain type of surface the quantities of injurious pitch collected by one method or another can give a very clear indication of where the best conditions are to be found. (For example, the best pH of the white water.)

Sometimes the pitch trouble takes the form of pitch spots in the paper. Such spots are easily identified under an ultraviolet lamp, and the situation can be accurately assessed by counting the spots and treating the data statistically. Other times, lumps of pitch stick in the wire causing light spots in the paper, which can be counted and evaluated in the same way.

When appropriate analytical methods have been worked out, the problem of eliminating pitch deposits can be tackled with some prospect of success. The pitch extraction data obtained may reveal that one of the pulps used is unusually pitchy, and it can then be replaced by some other pulp. The tackiness of the extracted pitch can also give a hint on what pulp is causing the trouble. It may be found that some sectors of the white water system have very high pitch content (for example the water from the last flat box) and the pitch level in the system can then be lowered by sewering this water. The trouble can also be caused by a flotation process which causes pitch to accumulate with the foam along the water line of flumes, stuff box or headbox. By reducing the percentage of air in the stock the trouble may be reduced to manageable proportions.

If the pitch trouble is not an acute, isolated occurrence, pH control is likely to be the most efficient remedy. It has been proved that a judicious addition of papermakers' alum to the white water will lead to the precipitation of free pitch particles on the fibers. This prevents a build up of pitch in the system and also appears to inhibit the formation of pitch deposits on metal. Lately, it has been claimed that even better results are obtained when some soda ash is added with the alum. The chemistry behind all this can be studied in the trade literature. Here, it will only be emphasized that the addition of chemicals for pitch control is a job for the mill chemist. The papermaker will notice when he has added too little alum, but if he adds more alum than needed, this will only show up much later as increased corrosion. To control the alum addition, the mill chemist should check on concentration, pH and—in critical cases—on pitch content in the white water.

A lot of experimentation may be needed to establish the best points of addition, the amounts of different chemicals to be added and the best tests for controlling the process. On the other hand, serious pitch troubles cost so much in lost production that one cannot afford to stray very far from optimum operating conditions during such experiments. Therefore, as much of the experimentation as possible should be done in the laboratory with the aid of some method for evaluating injurious pitch.

Sometimes, the best approach is to concentrate on the surfaces, where pitch collects rather than on the pitch itself. It has been found that a threshold treatment with polyphosphate sometimes results in a hydrophilic monomolecular layer on which pitch is less easily deposited. The polyphosphate may be added to the white water or to the shower water used on the machine parts in question, generally the top press rolls.

There are on the market a number of pitch dispersing agents, and the mill chemist is advised to evaluate these very carefully before introducing one to the mill. It is not uncommon that a chemical that is actually without effect, is being used for fear that trouble may appear if the addition were to be discontinued.

"Whether a saveall is good or bad, a competent chemist can do a lot to improve its dependability and efficiency."

Dirt Troubles

When dirt appears in the paper, the first concern of the control department should be to find its origin. The following is a list of things to look into in the paper mill. Of course, the papermaker may be right when he claims—as he is sure to do—that it all comes from the pulp mill, but this area is outside the scope of the book.

First check that the machine screen showers are open and operating at normal pressure. Inspect the bolts holding the screen plates and measure the width of some slots to see if the plates need replacing. Measure the flow of rejects from the screens and make sure that it is large enough. Check the pressure on the centrifugal cleaners and measure the reject flows. Analyze samples of reject and accept and calculate the cleaning efficiency of each unit. If the need is indicated, open up the cleaners and inspect for worn nozzles or rough surfaces. Check the cleanliness of the fresh water and the water lines, which may hold deposits or loose rust flakes, and inspect the strainers before the shower pipes. Inspect all additives to make sure that they are well dispersed or dissolved and free from impurities. Watch for spots where dirt can be accidentally blown or washed into the white water system.

When this program has been conscientiously carried out, take out some stock from the stuff box and analyze it for dirt. But don't do that earlier. It would be a shame to miss all that good fun in the paper mill. Automatic dirt counters are now being made, and are certainly most valuable in such production and quality control.

Control of basis weight and formation

It is really quite inconceivable that one should be able to control basis weight by the tearing out and weighing of small squares of paper the way this testing is normally performed. Local basis weight fluctuations generally far exceed and are therefore bound to obscure the long-term fluctuations, which one wants to check on. If papermakers have still managed to control basis weight in this manner with reasonable success, the explanation is partly that they have had the good sense to avoid wet or thin streaks and to discard extreme data without even making a mental note of them. It has not been only papermaking skill, though. Just as important was that the customer also lacked effective means of checking basis weight.

The advent of the Betagauge changed all this. This instrument is now being used both for continuous control on the machine and for periodic checking of the basis weight profile.

"When this program has been conscientiously carried out, take a sample of stuff box stock and analyze it for dirt. But don't do it earlier, as it would be a shame to miss all that good fun in the paper mill."

It is also an invaluable tool for trouble shooting. A method, too complicated to be described here (17) has been developed, which makes it possible to determine the magnitudes of the cross machine, machine direction and random components of the basis weight variations. The author has found this method practical and most useful. The information so obtained is of direct practical value to the trouble shooter. The cross machine variations are mostly caused by faults of or deposits in headbox or slice. The machine direction variations may be caused by consistency control, level control, flow control or by deficiencies in the approach flow system of the headbox. The random variations can be ascribed to turbulence in the headbox. In each case, a competent control engineer can do a lot to set things straight. It is desirable, however, to know the size of the different components under normal conditions so that, when trouble occurs, it can be classified in its proper category and the necessary corrections made.

Poor formation will be mainly a quality problem. On fast machines, however, wild formation may cause such a weakening of the "weak links" that the break frequency goes up. What interests us in this connection is how to trace machine trouble back to formation difficulties. Formation testers exist, which will give a rating to the formation of a paper compared to other papers of the same type, but it is by no means certain that this rating correlates with the formation property causing trouble, whether it be the thinness of the thin spots, the size of the heavy spots or the general weakening of the inter fiber bonds.

One way out is to prepare handsheets from headbox stock under carefully controlled conditions and to compare the strength of these sheets with the strength of machine made paper tested both in machine and cross directions. The handsheets are generally appreciably stronger, but any material change in the relation between the two can be an indication of formation difficulties. Both wet and dry strength should be determined.

This method may give little indication if the formation trouble results in lumps in the sheet sticking to the press rolls, but then there should be an increase in the amount of shavings collected by the press roll doctors.

Wire Troubles

Low wire life exemplifies a problem not directly reflected in the end product, which is all the same generally assigned to the control department. Below follows a list of things to do for the control engineer. If the wires wear down too fast, take the caliper of them at various running times. This can be done on the machine during washups with the use of a special type of caliper gauge. The data will reveal just how much faster than normal the wires are worn. If wear is actually faster than normal, investigate the knuckles under a microscope. Scratches are an indication of grits in the flat box covers, which latter should then be dressed more frequently. Centrifugal cleaning of the stock also helps. Sometimes other types of flat box cover should be tried. If the scratches are not very pronounced it may be that the vacuum of the dry boxes is unnecessarily high or that the material of the flat box covers has an inherently high coefficient of friction. If the wires tend to crack in the machine direction it is usually the nip pressure of the couch rider roll that is to blame. The rider roll should hardly touch the wire when the sheet is off or the wire will be pushed down into the couch holes with fatigue of the weft strands as a result. The clearance between the rolls should be checked with the vacuum box under normal vacuum and sealed off by a rubber blanket, since the shell may deflect somewhat under vacuum. Edge cracking can be caused by poor roll alignment, inefficient wire guide, cold edge jet water and high nip pressure at the ends of the rider roll. Plastic reinforced wire edges can be used if nothing else helps, but the added cost is considerable.

The most common wire trouble is ridge formation, which is normally caused by stock gathering on the wash roll and the inside wire rolls. Remedies are more efficient showers and the lowest possible wrap around the wash roll. It is quite possible that in the first place the trouble is caused by poor saveall operation.

Corrosion is not often responsible for wire failure since on fast machines the wires wear out before any appreciable chemical attack has taken place. If, however, corrosion is suspected, the loss in weight of both weft and warp strands should be determined. The weft strands are not normally abraded and any loss of weight must be explained by corrosion. Be careful to remove organic or other deposits on the strands before weighing. Corrosion is sometimes also recognizable under a microscope.

Special Trouble Shooting Equipment

Apart from a thorough understanding of the processes and a good knowledge of the system trouble shooting also calls for elaborate and efficient equipment. A few useful tools are listed below.

Vibration Analyzer

Many faults and disturbances around the wet end manifest themselves as vibrations, the origin, strength and frequency of which are easily determined with modern vibration analyzers. These instruments can also be used to study noise problems. To measure the total vibration level, a very simple instrument can be used, which is well within the reach of any paper mill. The best instrument so far is the recording vibration analyzer, which records the acceleration, velocity or amplitude of the vibrations within consecutive frequency bands from about 16 Hertz and up. Examples of things to look for with such instruments are faulty bearings, poor seals, whipping rolls, worn cog wheels, poor alignment and propagation of shock waves.

Pressure Transducers

Vibration analyzers are not able to detect vibrations with frequencies below 16 Hertz, but many wet end disturbances—especially those of a hydrodynamic nature — are below this level. Such phenomena are studied with the help of pressure transducers connected to taps on pipe lines, tanks or headboxes or—even better—inserted into these. The impulses are recorded on instruments with suitable response and sensitivity. The technique of such investigations is not too easily adopted, but when a modern paper machine has to be pressed to peak production, it may be well worth while to go to this trouble.

High Speed Photography

There were days when the old papermaker prided himself on being able to see what went on on the wire. Nowadays, high speed photography has stepped in and made such skill and confidence almost dangerous, for why rely on personal judgment when the camera is so much more accurate and objective. A typical modern set-up consists of a camera with a shutter time of 1/500th of a second synchronized with an electronic flash with a duration of 30 microseconds. During the time of exposure the wire of a 2000 f.p.m. machine will move no more than 0.001 foot.

High speed filming gives even more information, but a speed of at least 3000 frames per second—in some cases 9000 frames—was found necessary for optimum results. The technique is difficult and the cost of the equipment relatively high for trouble shooting in ordinary paper mills. If, however, the stakes are high—and on a 300 inch 2500 f.p.m. paper machine in trouble they can be formidable—high speed filming should be given serious consideration (27).

Radioactive Tracers

If a sample of pulp fibers tagged with radioactive salt is added to the white water system much information about velocities of flow, flow rates and blending of stock can be deduced from a beta ray count on samples taken at various points downstream of the point of addition. The technique can be used for example to study the blending of stock in agitated chests or the mixing of flows from a number of screens. Cross currents in the headbox can be detected by this method and if tagged fibers are added at the slice, information is obtained about the sheet formation on the wire. Flow rates can be calculated where flow-meters are not installed and other means of estimating the flow are lacking.

The techniques of tagging fibers and measuring radioactivity are well developed and offer little health hazard, but they still are rather elaborate for the ordinary control department. Considering that radioactive tracers would be used only on rare occasions to solve some special problem it is not considered necessary for the mill chemist to learn to master the technique or to acquire the instrumentation needed. This should be left to a specialist in some central laboratory or institution. The mill chemist, however, should acquaint himself with the applications of the method so that he will recognize the situations in which this specialist should be called in.

Computers

Electronic computers are now in many industries as commonplace as typewriters. The paper industry is not likely to reach that stage very soon, but sometimes situations present themselves in which the aid of a computer should be enlisted.

One example is the evalution of basis weight, caliper and moisture curves obtained with various instruments around the paper machine. Computers can be used to calculate both the variance and the frequency distribution of such curves and such data will, of course, be most helpful to the trouble shooter. Testing data and production figures can be arranged in series which lend themselves to analysis with computers. The search for correlations between various properties or occurrences in production is another field for computers. Occasionally, too, the more painstaking trouble shooter may end up with an equation, which can only be solved with the aid of a computer.

For these reasons there should be, even in medium sized paper mills, someone with a basic knowledge of what computers can do and how they are used. The computers themselves are generally available in some central institution.

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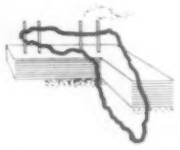

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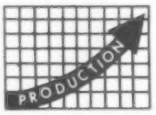

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Bleached Gw'd.	97.50/100.00	97.50/100.00			
Kraft, Blchd.	‡140.00/150.00	‡140.00/150.00	150.00/ —	150.00/ —	150.00/ —
Kraft, Blchd. Hdwd.	135.00/140.00		140.00/ —		
Kraft, Semi-bleached.	130.00/140.00				
Kraft, Unbl.	117.50/125.00	125.00/ —	125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡135.00/140.00	‡135.00/140.00	140.00/ —	140.00/ —	140.00/ —
Sulphite, Bl. Hdwd.	135.00/ —				
Sulphite, Unblchd.	125.00/ —	125.00/ —	125.00/ —	125.00/ —	125.00/ —
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3	$7.00/6.50	$7.50/7.25	$7.50/7.00	7.25/6.75
4	6.50/5.75	6.50/6.25	6.50/6.25	6.50/6.25
5	5.75/5.25	5.75/5.50	6.00/5.50	5.75/5.50
6	5.25/4.25	5.00/4.75	5.25/5.00	— /6.00
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	New York	Boston	Chicago	Los Angeles
	March 6	March 6	March	March
No. 1 Mixed Paper	$ 7.00/ 9.00	4.00/ 7.00	6.00/ —	12.00/ —
No. 1 News	12.00/ 13.00	11.00/ —	11.00/ —	14.00/ —
Overissue News (Lg. size)	11.00/ 13.00	9.00/ 11.00	16.00/ —	18.00/ —
Mill Wrappers	19.00/ 22.00	9.00/ 11.00	9.00/ —	13.00/ —
Old Corrugated Containers	19.00/ 20.00	17.50/ 18.00	18.00/ —	17.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	28.00/ —	50.00/ —
New Double Kr. Ld. Corr. Cuts	27.50/ 30.00	30.00/ 32.50	30.00/ —	27.50/ —
(Semi-chem. medium)	45.00/ —	45.00/ —	42.50/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	52.50/ —	— / —
New Br. Kraft, Env. Cuts	65.00/ 70.00	65.00/ 70.00	47.50/ —	45.00/ —
New Br. Kr. Bag Waste Prntd.	50.00/ 55.00	50.00/ 60.00	47.50/ —	35.00/ —
New Br. Kr. Bag Waste Unprintd.	55.00/ 60.00	60.00/ 65.00	55.00/ —	42.50/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	20.00/ 25.00	10.00/ —	27.00/ 30.00
White Newsblanks	42.50/ 45.00	47.50/ 52.50	30.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	55.00/ 60.00	50.00/ —	75.00/ —
Super Soft White Shvs.	65.00/ 75.00	70.00/ 80.00	60.00/ —	— / —
Hd. White Shvs.	75.00/ 80.00	80.00/ 90.00	75.00/ —	80.00/ —
Hd. White Env. Cuts	90.00/ 95.00	100.00/105.00	80.00/ —	103.00/ —
Col. Tab. Cards	40.00/ 42.50	40.00/ 42.50	35.00/ —	35.00/ —
Manila Tab. Cards	57.50/ 60.00	55.00/ 60.00	55.00/ —	60.00/ —
No. 1 Col. Ledger	32.50/ 35.00	30.00/ 35.00	35.00/ —	18.00/ —
White Ledger	45.00/ 50.00	42.00/ 47.00	45.00/ —	40.00/ —
Mixed Book & Mag.†	— / —	— / —	8.00/ —	— / —
No. 1 Books‡	15.00/ 17.50	18.00/ 22.00	22.50/ —	8.00/ —

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Wahlstrom Explains and Discusses His Press Theories

Author of the Wahlstrom theory of paper machine press operation sent us this letter commenting on the reference to his work in a recent Paper Trade Journal article.

I have read with great interest Mr. L. M. Woodside's article called, "Why Chemical Treatment of Wet Felts," that appeared in your January 9, 1961, issue of PAPER TRADE JOURNAL. In addition to being a very interesting and valuable evaluation of the importance of chemical treatments of wet felts it also discusses mechanisms of water removal in a press nip. Mr. Woodside feels that some of his experience and the conclusions regarding water removal that can be drawn from this experience are contradictory to my theory. I feel that some comments might clarify this.

It was mentioned in my paper that transfer of water from the felt to the paper occurs in the expanding part of the nip but that it would also occur if felt and paper were kept together after the nip. This re-wetting is very well illustrated by the examples shown by Mr. Woodside. That these effects would be particularly large for highly beaten stock such as carbonizing grades is fully in line with the physical laws governing this transfer. However, Mr. Woodside's experience does not in any way throw any light on what happens in the nip itself. The amount of re-wetting that has already occurred before the felt and paper leaves the nip and can be separated can not be determined or analyzed through the experience shown in this article.

Accuracy of Spot Tests

Taking each example in succession we can give the following explanation for the changes in moisture that have been recorded. First, before going into too much discussion of the actual size of the moisture figures, I would like to question the accuracy of spot tests. The general trend is obvious but my own experience shows that the moisture can vary within very large limits for normal operating conditions. This means that the actual size of the effects shown might not give the true picture. Therefore we have to be cautious in making quantitative statements. The improvement realized by taking away the pick-up felt from the nip is obviously due to two factors.

1. The reduction in nip widths due to the removal of the pick-up felt

2. The reduced transfer of water from felt to paper when the paper is not being sandwiched between two felts and thus being rewetted from both sides.

Addition of Paper Roll

The improvement realized by adding the paper roll between the felt and paper in Figure 4 was obviously due to the reduction in water transfer from the felt to the paper. It is not possible from Figures 4 and 5 to see if the paper actually followed the felt some distance off the nip on Figure 4 or if it actually stuck to the pressroll itself. However, Figure 5 shows two things. The paper follows the top roll further and the felt only lightly touches the felt on the return felt roll. The improvement in moisture content of the paper can thus be due to both the reduction in contact with the felt just at the nip and also further on along the felt.

The comparison between the tests shown in Figures 6 and 7 is obviously as was stated in the article; due to the re-wetting from felt to paper being much more pronounced the closer to the nip one comes. As was stated in my paper, there is a re-distribution of water within the felt itself that starts already in the nip. This re-distribution is obviously time dependent and is also a function of the time it takes for the felt to recover from its compression in the nip. Both these factors would tend to make the water in the felt more available closer to the nip than further on which would explain the difference in re-wetting effect shown by the distance from the press.

After the Nip

As my theory only was concerned with the case when the paper is taken off the felt immediately at the nip sticking to the top roll, I did not have any reason to include a Phase 3. What happens after the nip if the paper and felt are kept in contact does not in any way change the mechanism in the nip. It is obvious that a re-wetting of the paper if it is kept in contact with the felt will occur. However, that does not mean that a re-wetting does not occur in the nip itself. Mr. Woodside's explanation given under the heading "Wahlström's Theory," about what happens in Phase 2 does not seem to conform with general physical laws as the capillary forces far exceed any others. It can be easily shown that in the sealed area between the top roll and the bottom roll after the mid nip position there does not exist a pressure difference due to the vacuum, that could effect the water movement in paper or felt. Also the author refers to the summary of my paper given in PAPER TRADE JOURNAL while it would be more pertinent to refer to the main article shown in the August and September issues of The Pulp & Paper Magazine of Canada. There he can find all the material on which my theory is based also covering the redistribution of water from felt to paper in the outgoing part of the nip.

No Disagreement

The mechanism of the water removal in the press nip presented in my work does not in any way disagree with the results presented by Mr. Woodside. On the contrary, Mr. Woodside's experience strongly indicates the importance of the capillary forces and the re-wetting of the paper by the felt. There is one obvious conclusion that can be drawn from this interesting paper and that is that it is advantageous from a water removal standpoint to separate sheet and felt immediately at the end of the nip. Preferably they should be kept separate, but it is less objectionable to let the paper touch the felt further away from the nip.

Borje Wahlstrom

Karlstad Mekaniska Werkstad,
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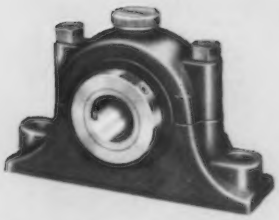

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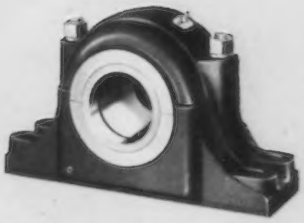
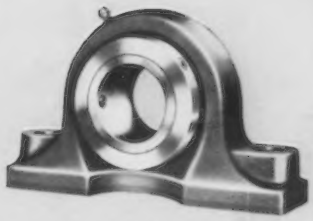
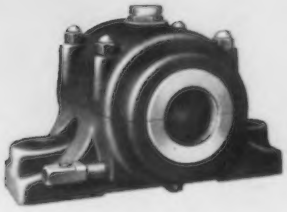


DODGE SPHER-ALIGN PILLOW BLOCKS WITH SPHERICAL ROLLER BEARINGS



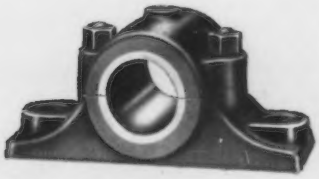
DODGE BALL BEARING PILLOW BLOCKS



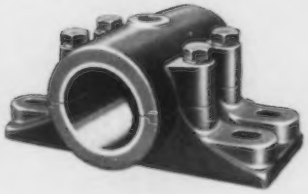
DODGE SLEEVOIL PILLOW BLOCKS

DODGE BRONZOIL PILLOW BLOCKS

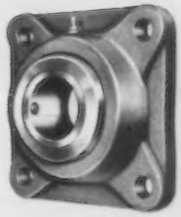
DODGE BRONZE BUSHED PILLOW BLOCKS



DODGE JOURNAL BEARINGS SOLID AND SPLIT



DODGE HEAVY RIGID PILLOW BLOCKS



FLANGE BEARINGS: HANGER BEARINGS: BEARING UNITS: TAKE-UPS

● **Dodge Pillow Blocks with Timken Tapered Roller Bearings.** America's quality pillow blocks. Assembled, lubricated, adjusted and sealed at the factory. 5 types for varying needs.

● **Dodge Spher-Align with Spherical Roller Bearings.** Rugged heavy duty, compact, inherently self-aligning. Exclusive Micro-Mount simplifies installation.

● **Dodge Ball Bearing Pillow Blocks.** Deep groove ball bearings with long inner races—high capacity. SL, SC and SCM models for light, normal and medium service respectively.

● **Dodge Sleevoil Pillow Blocks.** Ultra quality . . . extra long life . . . accessibility . . . *quiet*. Plain or water-cooled.

● **Dodge Bronzoil Pillow Blocks.** Efficient, low cost pillow blocks with self-oiling, capillary bronze bushings. Self-aligning. Large oil reservoirs.

● **Dodge Bronze Bushed Pillow Blocks.** Quiet fan and blower pillow blocks with two bronze bushings of high lead content mounted in one cast iron housing.

● **Dodge Journal Bearings — Solid and Split.** True running, dependable. Babbitted bearings with precision machined bores and faces. Finished bases.

● **Dodge Heavy Rigid Pillow Blocks.** Rugged, carefully bored, babbitted pillow blocks for many applications requiring grease lubrication. Finished bases and ends.

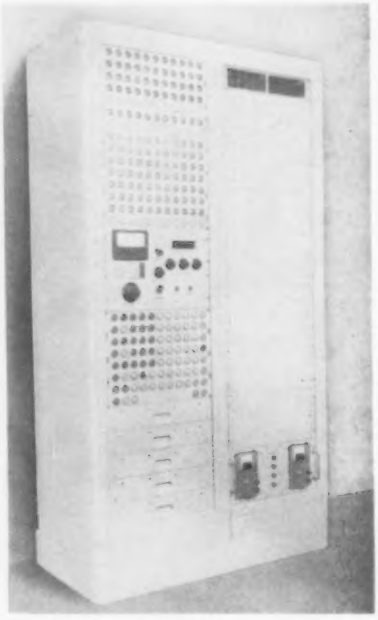
● **Bearing Units.** A wide variety—spherical seat, cartridge, flange, hanger, screw conveyor hanger, take-up. Ball, Roller and Sleeve types.

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look under "Dodge Transmissioneer" in the *white* pages of your telephone directory, or in the yellow pages under "Power Transmission Machinery."

DODGE

of Mishawaka, Ind.

NEW EQUIPMENT & SUPPLIES



Watchdogs 200 Process Functions From Single Panel

An electronic watchdog, designed to oversee as many as 200 high or low temperatures, pressures, flows, levels, or contact closures at the rate of five points per second, has been introduced by Hagan Chemicals & Controls, Inc. Designed to monitor any input that can be represented by a D.C. voltage as low as 10 millivolts full scale, the Hagan AIM (Alarm Indicating Monitor) contains display lights on a control panel to indicate to operators that out-of-limits conditions are occurring and indicate the point's name and number. When an alarm occurs, a warning horn also sounds. The horn may be silenced by an acknowledgement button, but the alarm light will remain lit until the out-of-limits condition is rectified.

Limits are individually set by inserting pins in a pinboard. Alarm accuracy is ±0.1 per cent full scale. Detection of an out-of-limits signal is obtained by comparing the voltage from the alarm set point pinboard to the voltage from the AIM's d.c. amplifier. All alarm functions are combined in one compact instrument. The readout and alarm panel for one 200-point AIM will fit into a panel area only 19x47½ inches.

Combinations of only 12 different basic printed circuit logic boards provide for input sequencing, time delay for amplifier balancing, selecting alarm values, addressing alarm lights, determining alarm conditions, and addressing input matrix for readout. The input devices are glass envelope, hermetically sealed reed relays, rated at 100-million operations. Five input relays are mounted on a printed circuit board.

Manual readout of any point, accurate to ± 1 per cent full scale of the increment selected, is available continuously. Once, each two second period, the system selects the point addressed for manual readout, and in 200 milliseconds holds its signal on the readout meter.

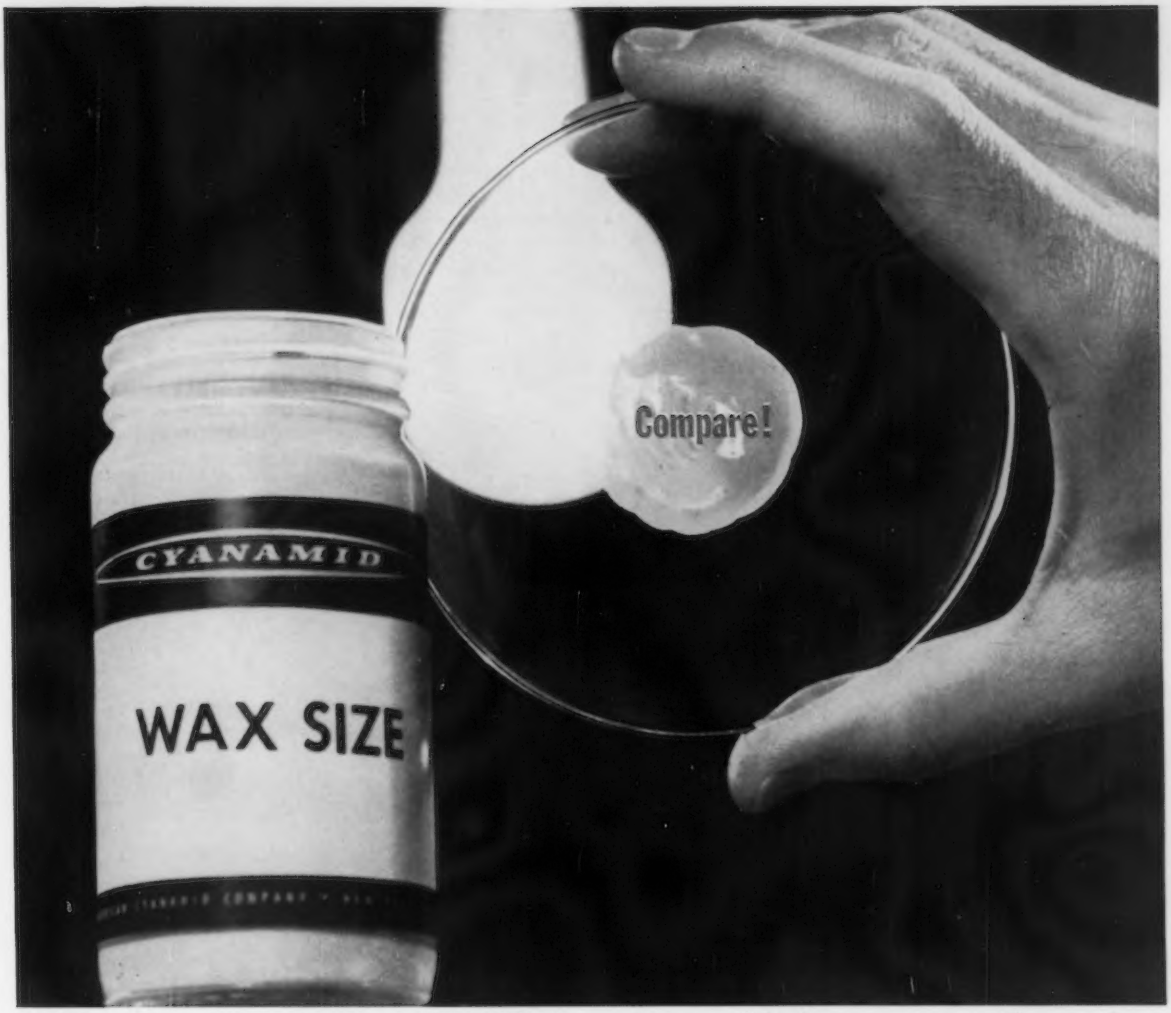
Precise readings over wide thermocouple ranges are accomplished by the use of range suppression and linearization. To provide visual check of the present location of the scanning address, and to indicate that continuous scanning is in operation, point identification is continuously displayed in digital form in lighted numbers on the control panel. Self-checking devices are incorporated into the AIM that provide maintenance and verification of functions as frequently as the operator feels is necessary. Write to Hagan Chemicals & Controls, Inc., Hagan Center, Pittsburgh 30, Pa., for further information.

Flow Regulation From Block Steel Valves

Two block steel valves for continuous, heavy-duty flow regulation applications have been added to the line of industrial instruments and regulators produced by McAlear Manufacturing Co. These valves are used in continuous boiler (surface) blowdown systems, hydraulic service, instruments, throttling service, water column blowdown, soot blowers, boiler sampling service and flow control of volatile liquids (anhydrous ammonia, chlorine, etc.).

Featuring a heavy design and extra thickness at all wear points, these valves are available in carbon steel or chrome-moly steel. They are claimed to provide flow regulation within 1 per cent of desired flow. They also resist excessive cutting arising from continuous throttling

SELF-INDUCTION STATIC NEUTRALIZER is the Portland Co.'s latest addition to its present line of Chapman static eliminating equipment. Since no power supply is needed the Neutralizer is intended to fill the gap where the use of electrically-operated eliminators is neither permitted nor practical because of hazardous conditions. The Model 60 Self-Induction Type Static Bar extends across the material with the stainless steel ionizing points ½ or ¾ inch from the web. The bar is applicable to coating and spreading machines, and makes an inexpensive method of reducing the static on driving and conveyor belts, as well as calenders and rewinders. The Portland Co., 58 Fore St., Portland, Me.



Lightest in color... best stability! Test for yourself the properties of ALWAX* and WAXINE* sizes, the products of Cyanamid, America's oldest—and largest—producers of **Wax Sizes.** See for yourself that they offer the lightest color available anywhere... and the best stability. Other advantages—? Plenty! The most complete line... to assure you of the exact **Wax Size** for your particular need. Compatibility with other paper-making chemicals. Properties that produce paper with lower water absorption, smoother surface, less curl, greater ink resistance, improved lactic-acid resistance. Cyanamid **Wax Sizes** can be used with rosin sizes to increase sizing efficiency, lessen the quantities needed, and create major production savings. Call your Cyanamid salesman for complete technical information to help you select the right **Wax Size** from the widest, lightest line of sizes available today.

*TRADEMARK

CYANAMID

AMERICAN CYANAMID COMPANY • PAPER CHEMICALS DEPARTMENT • 30 Rockefeller Plaza, New York 20, N. Y.

of a liquid. Pressure-temperature limitations of the valves are 1500 p.s.i. at 800°F.

Seats and disks are specially treated for surface hardness to Brinell 750 or Rockwell C70. The bolted body design permits use of a non-threaded seat. Model 37 has inside stem threads. Model 38 is designed with outside stem threads. Both Model 37 and 38 valves are available in connecting pipe sizes from ⅜ to 2 inches. McAlear Manufacturing Co., 1901 South Western Avenue, Chicago 8, Ill.

Starch Ether Gum in Wide Range of Viscosities

The availability of a series of starch derivatives, called the Essex Gums, is announced by Penick & Ford, Ltd., Inc. The properties of these starch ether gums are achieved through the substitution of ether side chains for hydroxyl groups within the starch molecules. As a result, the Essex Gums are claimed to show: Minimized tendency to gell and retrograde, and improve viscosity stability on aging; improved water-holding ability; lessened migration from the film into the paper; good film-forming ability, excellent grease resistance and ink hold-out; low gelatinization temperatures and rapid cook-out; great clarity in films; high gloss in films, sometimes with less calendering of pigmented coatings; high reactivity with resins; good chemical stability over a wide range of pH, salt concentrations and other conditions.

Laboratory tests to date indicate that the Essex Gums offer advantages in the following applications: Pigmented coatings; high-gloss ink printing; grease, oil, wax, and lacquer holdout; total or partial replacement of hydrophilic film formers; tacky borated adhesives; non-wrink-

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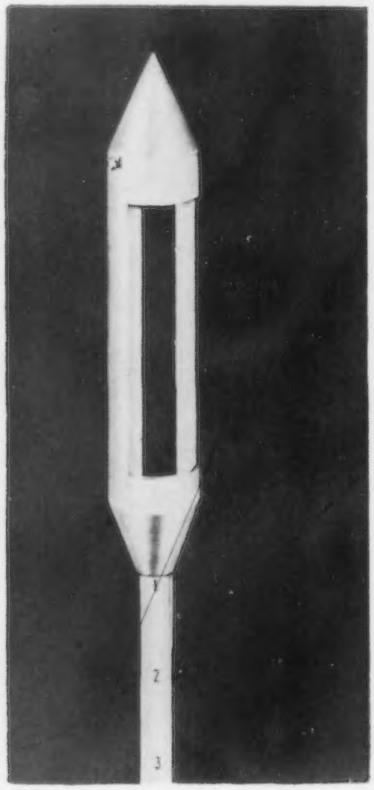

SAMPLE EXTRACTOR can be used to take samples from deep within shipping sacks, bags, bales and containers. This rust-proof and corrosion resistant extractor is light weight and simple to operate. Just a flick of the wrist and the sample is contained within the sampling chamber, ready for inspection. It can be liquid, granular or powder, or it can be wood chips. Two models go a maximum depth of 24 or 48 inches with sampling chamber sizes of 2 x 15/16 inches or 6 x 2 inches. Testing Machines Inc., 72 Jericho Turnpike, Mineola, N. Y.

YOU CAN'T MISS A SUPERMARKET BAG

made on a Potdevin Bag Making Machine...because all converters who supply bags to America's busy supermarkets use Potdevins. This unanimous choice dates back to 1893. And Potdevin has been designing and building machines for expanding converters ever since.

Remember...to keep your profit "in the bag". Replace old equipment with modern Potdevin machines, designed to keep up with the "jet-age" pace of supermarket merchandising.

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POTDEVIN MACHINE CO. 223 NORTH STREET, TETERBORO, N. J.

Designers and Manufacturers of Equipment for Bag Making, Printing, Coating, Laminating, Gluing and Labeling.

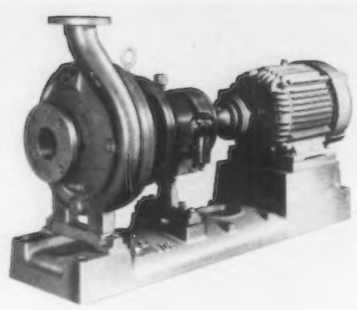
ing adhesive; remoistening adhesive.

The Essex Gums are made in a wide range of viscosities extending from the viscosity of essentially unmodified starch (Gum 1300) to a very thin product (Gum 1390) which can be prepared in a 40-45 per cent solids concentration Penick & Ford, Ltd., Cedar Rapids, Iowa.

Centrifugal Pumps Feature Back Pull Out Design

A line of single stage centrifugal pumps announced by Goulds Pumps, Inc. is said to provide the optimum in interchangeability of pumps and parts. They are designed especially for corrosive or abrasive service on cold or hot (−350° to 500° F.) clear liquids or slurries.

The eleven sizes in the line provides capacities up to 775 g.p.m. and heads up to 300 ft. All pumps in the group are of the top centerline discharge, back-pull-out design which includes such features as (A) maximum dimensional interchangeability between all pumps, with one overall length of 23 inches for all sizes; one 1⅛ inch coupling fits all sizes; four inches dimension end of suction to centerline of discharge; (B) top centerline discharge is self-venting;



(C) back-pull-out design enables easy replacement of parts most subject to wear or damage without disturbing pipe connections or motor mounting.

The complete line of eleven pumps is stocked in three standard constructions: ductile iron, 316 stainless steel and Gould-A-Loy 20. It is also available in any machineable alloy to meet special requirements. Goulds Pumps, Inc., 220 Black Brook Rd., Seneca Falls, N. Y.

"Flat" Fourdrinier Wire Leads To Improved Paper Quality

Lev-L-Weve, flatter and smoother than any fourdrinier wire ever available, has been announced by Wisconsin Wire Works. "This wire makes it possible for paper mills to produce a paper with a marked improvement in quality with lower-cost production," said James E. Watson, president of the Appleton, Wis. firm.

Lev-L-Weve is made possible through exclusive production methods and special equipment originated by the Wisconsin Wire Works. It is woven by a method which fabricates the "warp" and "shute" wires on the same level plane.

The wire is said to produce a smooth paper surface. Wire marks on the paper are greatly reduced, practically eliminating the two-sidedness of the paper sheet.

The wire also delivers a substantial improvement in paper formation. It provides greater stock and filler retention and, at the same time, assures more rapid drainage, say company spokesmen. It retains random fiber arrangement. Quicker drainage makes faster operating speeds possible. Steam and horsepower requirements are reduced. The positive level surface of Lev-L-Weve Fourdrinier wire substantially reduces wear and thus increases wire life.

Mills, which have tested the wire, report cost-savings and production results far exceeding expectations. A patent application has been made for the Lev-L-Weve wire.

Conical Perforation and Thickness of Material

are the principal characteristics of my

Screen Plates

made of brass, bronze or stainless steel

Also:

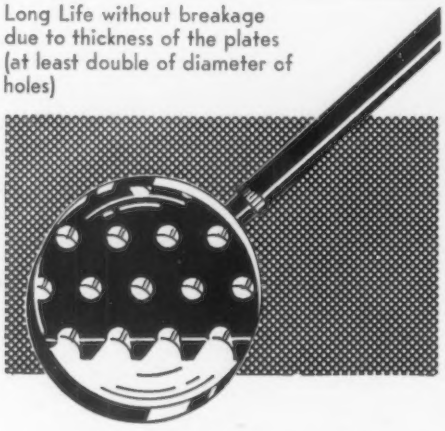
Cut Plates, complete Screen Drums,

Dandy Rolls for all purposes,

Flat and Rotary Screens,

All kind of Fourdrinier Wires for Paper, Board and Cellulose Mills

Long Life without breakage due to thickness of the plates (at least double of diameter of holes)



diameter of holes down to 0.02" for screens and classifiers of all systems

Proved in most of the European and in many Oversea Ground Wood Paper and Cellulose Mills

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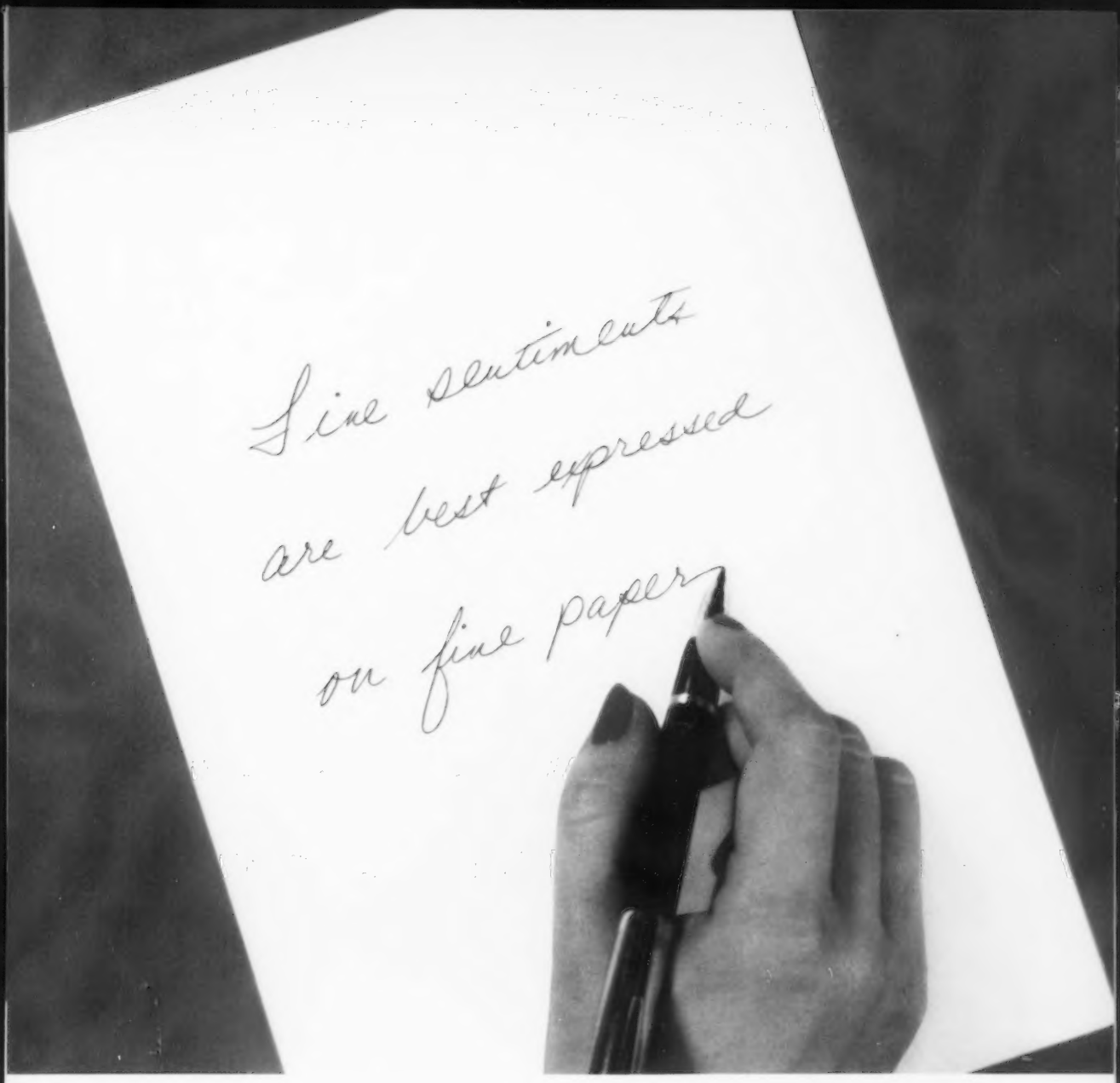

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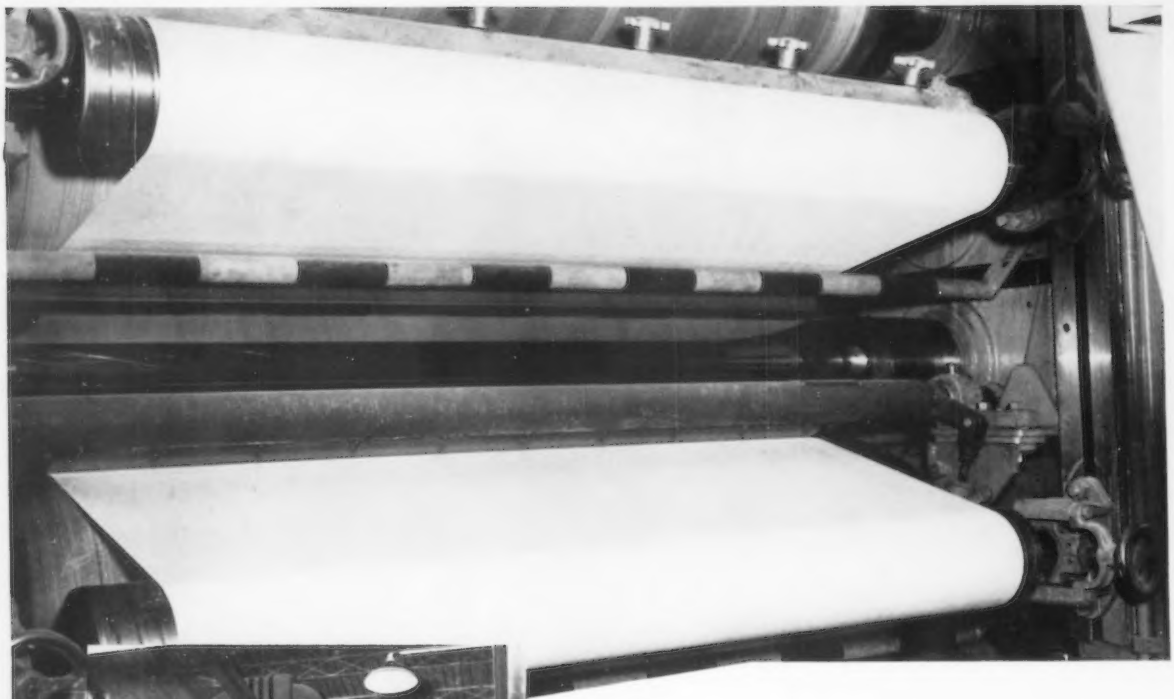
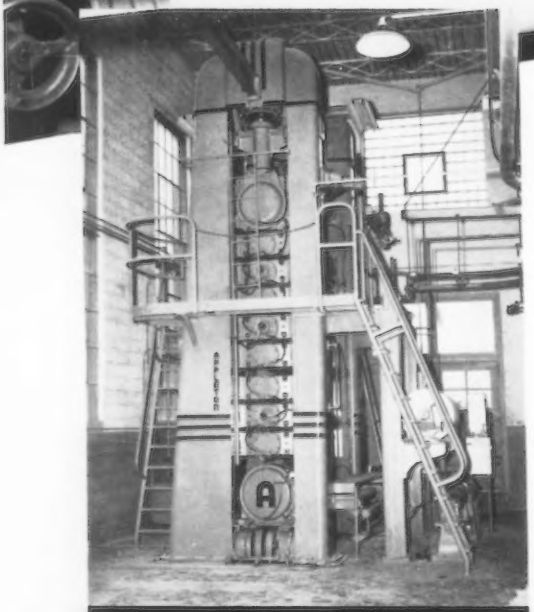
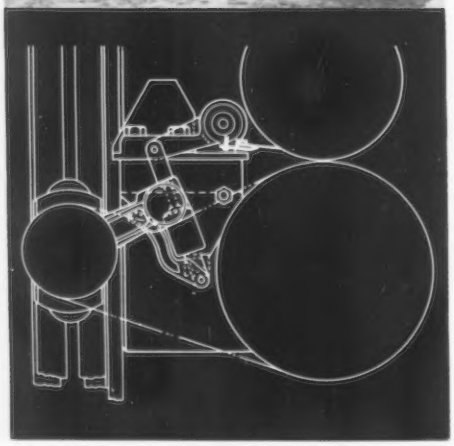






Doctoring is the business of specialists

As DOCTORING SPECIALISTS, Lodding is constantly joining forces with progressive machine builders to achieve excellence in doctor performance for papermakers everywhere.

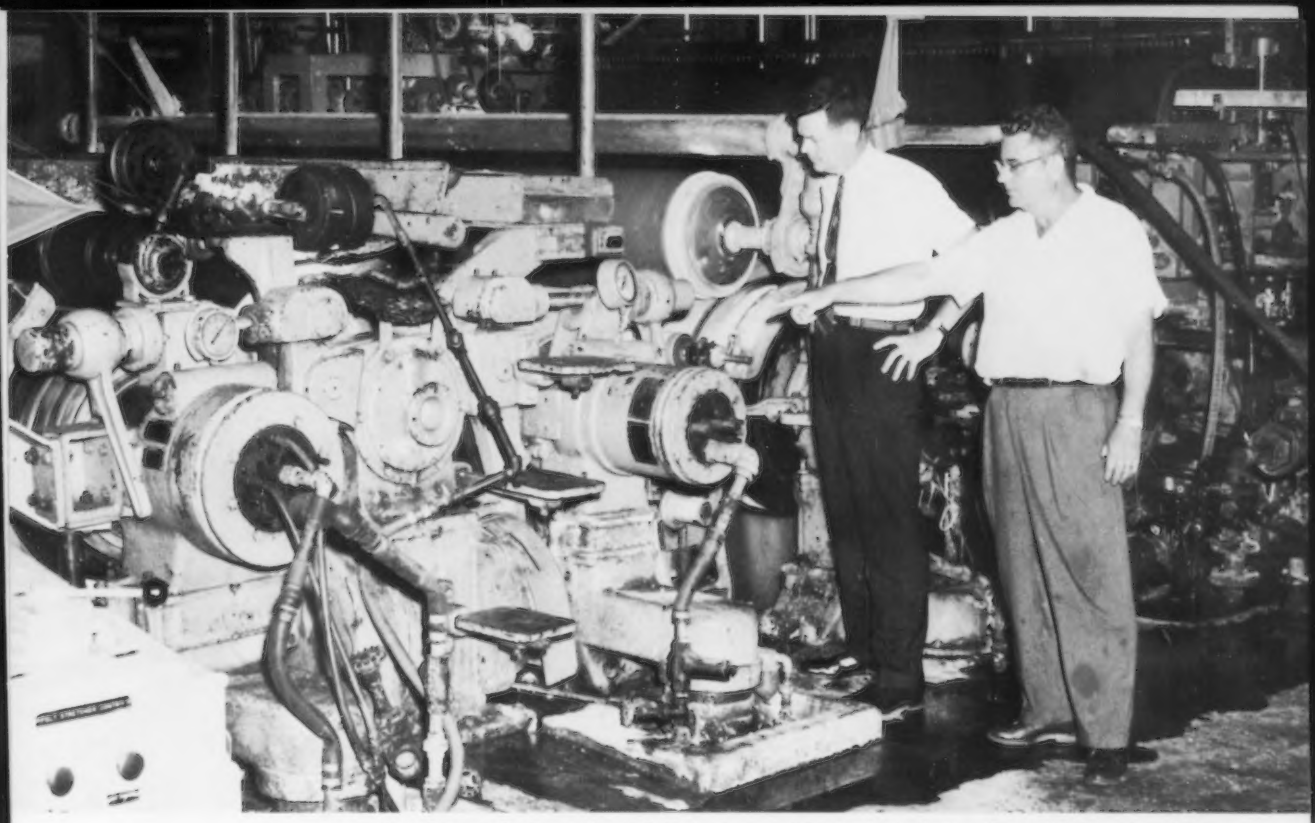
It was through just such a combination of engineering and manufacturing skills that the first successful installation of doctors was made on a supercalender running inked, waxing stock. It took place in 1948 at the Badger Paper Mills.

Ever since, these same Lodding Doctors, custom designed for the Appleton Machine Company, have had a notable record of performance keeping the rolls clean and shiny. The supercalender was engineered to apply 2000 lbs. per lineal inch nip pressure at the bottom nip, while operating at speeds up to 1600 fpm.

They were among the first doctors to be equipped with multiple station hydraulic oscillation. Now, with wider and faster machines, the importance of calling on specialists to solve doctoring problems increases. Lodding is always ready to accept any doctoring assignment, no matter how difficult, in cooperation with the machine builder or directly with the papermaker.

When you want excellence in doctor performance, specify Lodding.

LODDING
Engineering Corporation
AUBURN, MASSACHUSETTS



L to R James W. Clark, Huyck Sales Engineer and C. A. (Buck) Barlow, Paper Mill Superintendent

HIGH Performance from HUYCK

at Gulf States Paper Corporation

Here is testimony to the fact that Huyck Felts cost less over the "long run."

At Gulf States Paper Corporation, Tuscaloosa, Alabama, a Huyck Felt, incorporating the improved performance characteristics of Resistex® Felts, set an all-time mill record. An excellent startup and consistent high product quality were outstanding features of the record run.

Why not let your Man from Huyck show you how Huyck Performance is High Performance on your machine.

HUYCK FELTS

Huyck Felt Co., Rensselaer, N. Y.; Aliceville, Ala.

Division of Huyck Corporation

In Canada: Kenwood Mills Limited, Arnprior, Ontario

FIRST IN FELTS SINCE 1870

"Caged" for Longer Life!

The two land-riding cages in Torrington Spherical Roller Bearings assure proper roller spacing and guidance, even under rugged conditions of shock load and sustained high speeds. These fully machined cast bronze cages operate independently. Their design eliminates drag on rollers. These high-strength cages help bearings give longer life by providing low friction, smooth running and cool operation. Highly effective and generous lubrication of all contact surfaces is achieved with the open-end cage design.

The result: Torrington Spherical Roller Bearings are built to give extra years of unmatched service life in heavy-duty applications. Torrington's long experience in design, engineering and manufacture of every basic type of anti-friction bearing provides the finest spherical roller bearings available. You'll find it pays to standardize on Torrington.

Superior design features of TORRINGTON SPHERICAL ROLLER BEARINGS

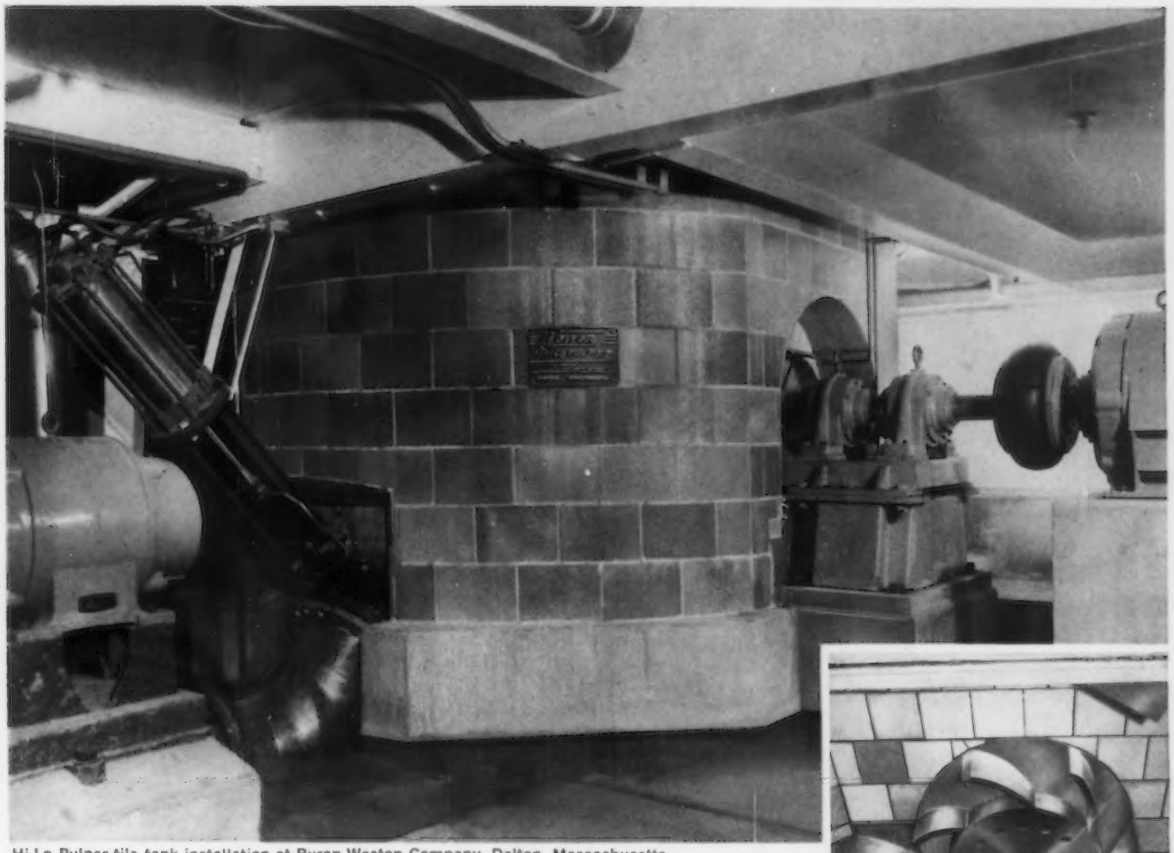
- integral guide flange for roller stability
- asymmetrical rollers seek flange for positive guidance
- electronically matched rollers
- size-stabilized races
- fully machined land-riding bronze cages
- controlled internal clearances
- even load distribution
- inherent self-alignment
- long service life

progress through precision **TORRINGTON BEARINGS**

THE TORRINGTON COMPANY South Bend 21, Indiana • Torrington, Conn.

Tile Tank Hi-Lo Pulper at Byron Weston Company

SOLVES LOW HEADROOM PROBLEM



Hi-Lo Pulper tile tank installation at Byron Weston Company, Dalton, Massachusetts.

The low speed rotor, with large curved blades, provides quick breaking and maximum circulation, forcing stock across the tank to the high speed rotor for defibering.

In January of 1960 Byron Weston came to Jones with a special pulping problem. To produce their high grade cotton fibre papers Byron Weston uses a wide variety of hard-to-defibre furnish. They needed a pulper that could handle this furnish efficiently, but . . . here was the problem . . . they also needed a pulper which could be installed in 10′ headroom and still handle 35 tons per days.

Jones engineers solved both problems effectively with a specially designed tile tank Hi-Lo Pulper. It meets the limited headroom requirements without sacrificing the proven efficiency of the standard height stainless steel tank Hi-Lo.

Designed for batch or continuous pulping with low power consumption, the Jones Hi-Lo Pulper can be installed in areas where the headroom is as low as 6½′.

The notched blades of the high speed rotor, turning at an average tip speed of 7600′ per minute, project only ¼″ and use power most efficiently for defibering. The blades, held securely by duroid wedges, can be easily replaced.

E. D. JONES CORP. member BELOIT group PITTSFIELD, MASS.

Jones

PULP MILL EQUIPMENT AND STOCK PREPARATION MACHINERY

Canadian Associates:
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PJT NEWS OF SUPPLIERS

S. F. Oakes

W. H. Ware

P. W. Hall

W. E. Buchanan

Hobbs Manufacturing Co., Worcester manufacturer of winding machinery, cutting equipment and die presses, at a meeting of the board of directors, elected a new president and named its president for the past 19 years to head the board.

Willard H. Ware, who became president and treasurer of the company shortly after he purchased control in late 1941, was made chairman of the board and retains his post as treasurer. Stewart F. Oakes, who joined Hobbs in 1948 as assistant to the president, was elected president of the company.

Preston W. Hall was promoted to succeed Mr. Oakes as vice president. Mr. Hall has been with Hobbs since 1954 as project engineer, production manager and factory manager.

Appleton Wire Works Corp., Appleton, Wis., has announced the appointment of W. E. Buchanan, Jr., as Southeastern sales representative.

This appointment will enable the parent company better to service those mills located throughout the Southeast. Mr. Buchanan will reside in Montgomery, Ala., and has established offices in the Appleton Wire Works plant in that city. Appleton Wire Works is the leading manufacturer of wire cloth to the paper industry.

Thiele Kaolin Co., and its affiliate, **Burgess Pigment Co.** of Sandersville, Ga., producers of hydrous and anhydrous aluminum silicate pigments and kaolin clays, announce the appointment of G. L. Hembree of Appleton, Wis., as Mid-west sales representative for both companies.

Mr. Hembree was formerly associated with Borden Chemical Co., The Sherwin-Williams Co., and Du Pont. He will continue to reside in Appleton, Wis.

Rust Engineering Co. of Pittsburgh and Birmingham has named G. Frank Gardner to a newly created position of manager, systems and procedures.

Previously, Mr. Gardner was general manager of George Brothers where he supervised the financial planning of a new country club development at Sewickley Heights, Pa. Before that he was vice president and controller of Schaefer Equipment Co., Pittsburgh, Pa.

Huyck Corp. has announced the promotion of C. A. Lee, formex division general manager, to vice president. Formerly chief of paper and tissue process development for Kimberly-Clark Corp., Mr. Lee served as a consultant to Kimberly-Clark, Time-Life, Inc., and the Huyck Corp. before joining Huyck as general manager of its synthetic fourdrinier wire division. Formex, with facilities in Knoxville and Greeneville, Tenn., manufactures "Forming Fabrics" in the United States and is constructing a new manufacturing plant in Kentville, Nova Scotia.

G. L. Hembree

G. F. Gardner

C. A. Lee

T. S. Morse

Hercules Powder Co. (Canada), Ltd., has announced the appointment of Thomas S. Morse as sales manager.

Mr. Morse, who has been closely connected with the paper industry in Canada and the United States, for the past 20 years, will make his headquarters in Montreal. He received his elementary schooling in Bathurst,

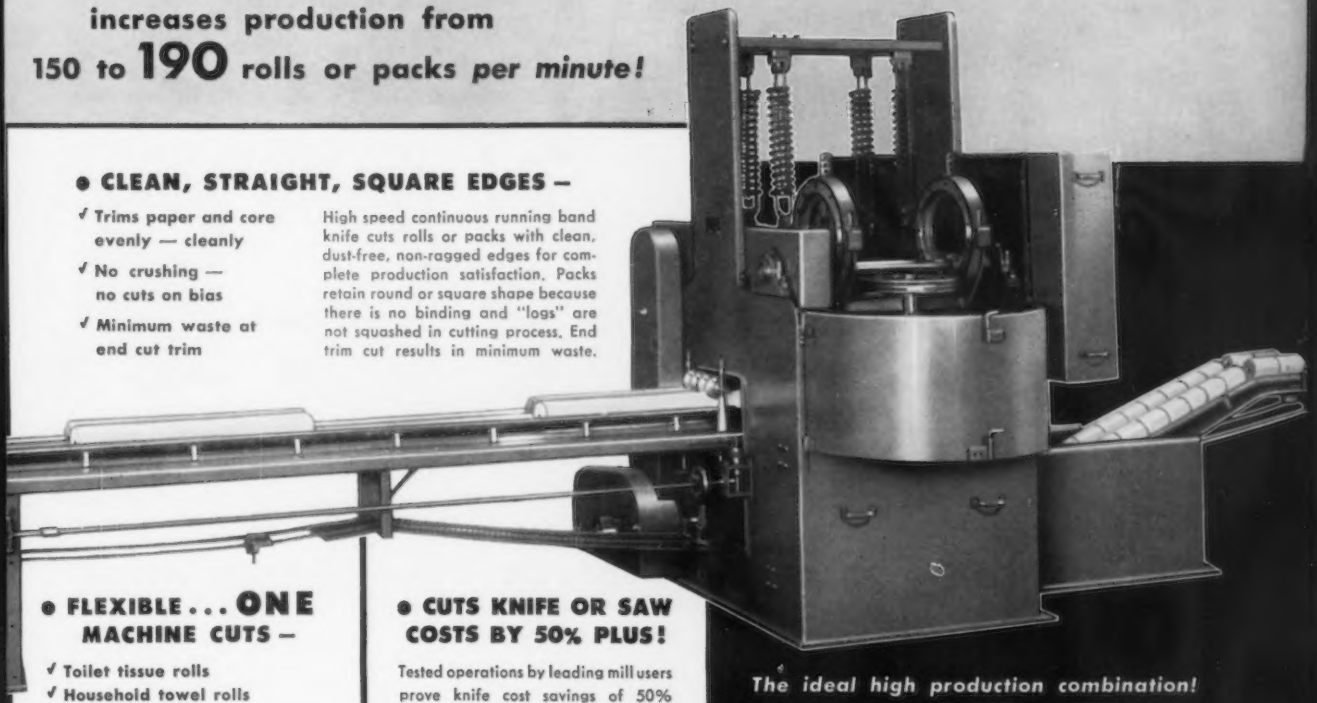
"Well, I've discovered what the banging in the pipe was."

A case of tissue every 33 seconds!

Hudson Sharp's NEWLY IMPROVED

PAPER ROLL and PACKAGE CUTTER

increases production from 150 to 190 rolls or packs *per minute!*



• CLEAN, STRAIGHT, SQUARE EDGES —

- ✓ Trims paper and core evenly — cleanly
- ✓ No crushing — no cuts on bias
- ✓ Minimum waste at end cut trim

High speed continuous running band knife cuts rolls or packs with clean, dust-free, non-ragged edges for complete production satisfaction. Packs retain round or square shape because there is no binding and "logs" are not squashed in cutting process. End trim cut results in minimum waste.

• FLEXIBLE . . . ONE MACHINE CUTS —

- ✓ Toilet tissue rolls
- ✓ Household towel rolls
- ✓ Interfolded towels
- ✓ Interfolded tissues and other paper products

A single H-S cutter can be furnished to handle various types and sizes of products. Changeover parts are reasonable in cost and only nominal downtime is required to switch production. There's no need to have a separate cutter for each type of product you produce. This means important savings to you in capital investment, labor and space.

• CUTS KNIFE OR SAW COSTS BY 50% PLUS!

Tested operations by leading mill users prove knife cost savings of 50% and more! Exclusive H-S, *low cost* endless band knife 17' long x 3½" wide lasts considerably longer than conventional types. Knife maintains peak cutting efficiency throughout its life because it is continuously sharpened by automatic grinding wheels while running. *It need never be removed* until completely worn and ready for discard.

The ideal high production combination!

H-S Paper Roll and Package Cutter and 60-B Automatic Roll Winder

Hudson Sharp's 60-B Roll Winder reduces jumbo rolls to finished rolls at speeds up to 1200 FPM *— with new, positive, "CLEAN-CUT" sheet perforations.* Handles web widths to 93". Automatic, progressive winding plus finished roll stripping and the most accurate sheet or measured roll count are just some of the standard features. Automatic core loading attachment available. Elimination of slitters for use with log cutter speeds output reduces web breakage and minimizes downtime. Get the complete facts, now!

New mechanical innovations have increased roll and package production from *150 to 190 per minute!* . . . A highly important factor in today's automation production. Two lanes of products are fed, cut and delivered simultaneously — in length cuts of 4" to 12" in ½" increments — log diameters of 4" to 5½". Can be used independently or in-line with automatic roll winders. Heavy-duty construction and counterbalanced rotary and eccentric motion provide smooth, dependable, trouble-free operation. Write today.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

FMC Packaging Machinery Division

Hudson-Sharp Machine Company

1201 MAIN STREET, GREEN BAY, WISCONSIN

NASH

Paper Mill Vacuum Pumps Designed for Every Desirable Quality, and the First of these is

DEPENDABILITY

When just 3 days lost production on a paper machine can cost more than the vacuum pumps, dependability is the vital factor in pump selection.

Nash Vacuum Pumps are dependable because they are built big enough and heavy enough to stand the pounding of around the clock production, day in and day out. They are reliable because they have only one moving part, and that rotating without wearing metallic contact. They are reliable because the heavy duty ball bearings are located outside the pump casing where they are accessible. They are reliable because they operate at the low speeds necessary for long life and reliable operation.

Nash Vacuum Pumps have been proving their ability to insure uninterrupted production in leading paper mills for nearly a half century. Install them and be safe.

The new Nash 5308-A shown above, has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce a variety of capacities and vacuums.

NASH ENGINEERING CO.

South Norwalk, Connecticut, U.S.A.

N. B., and graduated in 1936 from McGill University with a B.Ch.E. degree.

In 1940 he joined Hercules Powder at Freeman, Ontario, as a chemist and service engineer transferring to the Holyoke, Mass., office of Hercules in 1943.

Mr. Morse moved to the Hercules' home office in Wilmington, Del., in 1947 to work on paper chemicals development. In 1949 he became a sales supervisor in the PMC Department and prior to his present appointment has been manager of sales service for that department.

G. G. Wurtmann

L. E. Georgevits

Nichols Engineering & Research Corp., announces the appointment of George G. Wurtmann as assistant manager of the Nichols Pulp & Paper Division.

Mr. Wurtmann is a graduate of the College of Engineering of New York University.

He joined Nichols in 1959.

Borden Chemical Co., New York, announces appointment of Louis E. Georgevits to the position of manager of technical sales to the paper industry for the Thermoplastics Division.

Formerly technical service manager for paper industry chemicals, Mr. Georgevits joined Borden in 1955 as a chemist at the Bainbridge, N. Y., casein laboratories. Shortly thereafter he became laboratory section head, and received the title of technical service manager in 1960. Prior to joining Borden Chemical, he was associated with Titanium Pigment Corp. for four years, working as a paper chemist.

CIBA Co., Inc., Fair Lawn, N. J., announces a reorganization of sales and administrative responsibilities.

C. J. Weidmann, vice president and technical director, assumes increased responsibilities in the direction and co-ordination of the three product divisions.

C. O. Stevenson, formerly sales manager of the company's southern district, has been named manager, dyes division.

P. J. Luck and P. L. Penaud con-

tinue as managers of the Chemical Specialties Division and Pigments Division respectively.

Other promotions announced include F. P. Russell, F. E. Nevins and E. R. Rogers.

Mr. Russell, formerly manager of CIBA's Philadelphia district, has been named commercial manager.

Mr. Nevins, formerly sales supervisor of the Philadelphia district, has been named manager of the Philadelphia district.

Mr. Rogers, formerly working on special assignments, has been named supervisor of marketing services.

John Bart

E. J. Cook

S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N. Y., has promoted John Bart to the position of production manager. He has been head of the standards department for the past five years.

Mr. Bart received his degree in mechanical engineering at Pratt Institute. Joining S & S in 1946, he spent several years as an expediter before being placed in charge of Methods and Tooling, an assignment he will retain in his new position.

The knowledge and experience accumulated through his closeness to production problems, quality control methods and material flow will be an invaluable asset to Mr. Bart in managing production.

American Cyanamid Co., Bound Brook, N. J., has appointed E. J. Cook to the sales staff of its dyes department. Mr. Cook will be assigned responsibility for serving the paper industry in the southeastern United States.

Mr. Cook's headquarters will be in the department's Charlotte, N. C., office, which is under the direction of R. W. Angstadt, manager of the Southern district.

Mr. Cook joins Cyanamid after more than 13 years as a technician and sales representative with companies serving the paper trade. He previously was a district technician for the Kelco Co. of Mobile, Ala., with responsibility for sales service in that firm's Southern territory.

(Continued on page 67)

Departmentized wrapping increases efficiency, brings new economies to Montag Bros, Inc.

Low initial cost and minimum maintenance led Montag, Bros., Inc., Atlanta, Georgia, to specify Hayssen for its packaging department expansion. The three Hayssen Machines, above, wrap the company's notebook fillers in polyethylene at speeds to 105 packages per minute. Six other machines wrap envelopes, stationery, ream stock, etc. Departmenting your wrapping operation is an effective way of gaining new production economies by allowing concurrent wrapping of all products. Discuss your wrapping problems with Hayssen. Call or write today.

When you specify Hayssen:

. . . you specify the only equipment that is backed by over two years of paper product wrapping with polyethylene, Mylar, Vitafilm, polypropylene, all modern films *are now being used on Hayssen equipment.* When considering wrapping machinery for your plant, insist on actual operational reports instead of test results achieved under laboratory-like conditions. Hayssen builds equipment that delivers results.

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Atlanta • Boston • Chicago • Columbus • Dallas • Denver • Detroit • Evansville, Ind. • Jackson, Miss. • Kansas City
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14,000,000 lbs.

National POLYVINYLIDENE CHLORIDE

"On Stream to lock 'em in or out—longer."

RESYN® 3600

LATEX FOR PROTECTIVE COATINGS

Our 14,000,000 pound RESYN 3600 plant is now "on stream" at Meredosia, Illinois. This marks the first commercial production of National's water dispersed polyvinylidene chloride and brings combined capacity at Meredosia to more than 80 million pounds of polymer emulsions and latices annually.

RESYN 3600 promises a revolution in protective coatings with simple low cost application by high speed coating machines or spraying. Its barrier properties are exciting and exceptional:

MOISTURE—moisture vapor transmission is 2½ to 5 times lower than that of polyethylene.

ODORS—resistance to transmission of common gases is 1000-2000 times greater than polyethylene.

CHEMICALS—almost complete non-reactivity to concentrated acids, solvents, alkalies and other corrosive materials. Completely resistant to grease and oil.

Fire retardancy is excellent.

RESYN 3600 has already found acceptance in paper and paper converting fields. It may be coated on various paper stocks and converted into multiwall shipping sacks, fiber drums, paper boxes, shipping cartons, paper pouches and food containers.

RESYN 3600 also offers interesting possibilities as a chemical resistant coating, a textile finish, a binder for non-woven industrial fabrics and other uses where its outstanding properties are needed.

Write or call your nearest National office for full information.

National

NATIONAL STARCH and CHEMICAL CORPORATION

750 Third Avenue, New York 17 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

And All Principal Cities in the United States, Canada, United Kingdom, Mexico and Australia

Precision

also in the field of paper machine engineering

This modern automatic pick-up machine is suitable for the production of pulp wadding, sanitary papers, tissue towels and thin M. G. papers

Special characteristics:

fully automatic operation of the whole machine from a control desk •

Special equipment for a quick change of wires, felts and doctors • Maximum running speed

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Eisengießerei und Maschinenfabriken · Western Germany

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Telephone: Murray Hill 9-6400 Telex: TWY - NY 1 - 2092

NEWS OF SUPPLIERS

(Continued from page 63)

Harris-Seybold Division of Harris-Intertype Corp., Cleveland, Ohio, has promoted C. A. Loefgren to the post of vice president—sales.

Lloyd G. Butler has been promoted to sales manager. Their promotions reflect Harris-Seybold's sales growth and its further development as a decentralized division of Harris-Intertype with responsibility for its own engineering, manufacturing, sales.

Mr. Loefgren has been with the company for 14 years, serving as general sales manager since 1957. He was previously Western District manager, with headquarters in Chicago. He has been in printing equipment sales for 30 years, and is well known in the major printing centers of the U. S. and Canada.

Mr. Butler joined Harris-Seybold in 1949 and was one of the first graduates of its Executive Development Program. He has moved up through a variety of field-selling and sales-management posts, the most recent being assistant general sales manager.

P. H. Koplik

Michael Koplik

Perry H. Koplik & Son, Inc., is the name of a new company formed in New York City to deal in waste paper, wood pulp and paper. The founder of the company, Perry Koplik, has had 24 years experience serving the paper industry with Castle & Overton, Inc. He held the position of senior vice president until his recent resignation. Associated with Mr. Koplik in his headquarters at 745 Fifth Ave., New York, is his son Michael.

The Hubinger Co., announces that Richard A. Yanka has joined the technical sales service staff. Mr. Yanka is a graduate of Tri State College with a degree in chemical engineering. For the past 12 years he has worked in the starch and paper industry primarily in the areas of research and development. For the past three-and-a-half years he was with Fitchburg Paper Co.

Mr. Yanka will be located at the technical sales service laboratory in Keokuk, Iowa. He will direct his efforts to the development of special starch applications to paper, and technical assistance to customers.

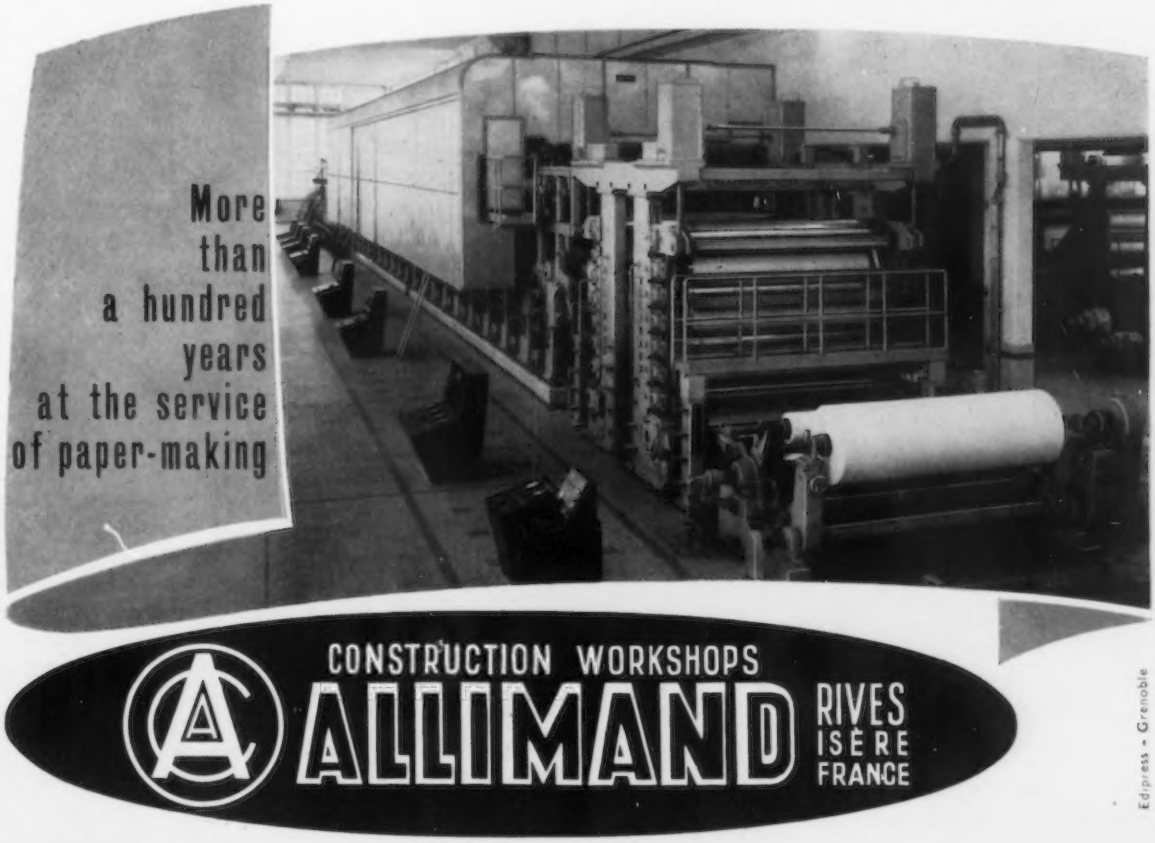
Chicago Bridge & Iron Co. announces the transfer of its Process Division headquarters from New York to Chicago. The division's pilot plant also has been moved to Chicago.

Personnel now in Chicago are A. N. Chirico, division manager; J. C. Paccione, staff supervisor; D. J. Madden, supervisor of the pilot plant and field service; L. T. Taylor, J. A. Karoly and C. C. Bryant, engineers.

H. E. Jacoby remains in CB&I's New York office as manager of the eastern region and export sales. He is assisted by J. P. Kolb.

H. G. Lankenau is manager of the southern and southwestern sales regions. He is headquartered in CB&I's Atlanta sales office.

Mr. Chirico is serving temporarily as manager of sales in the central and northwestern regions.



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STEAM, HYDRAULIC AND ELECTRICAL ENGINEERING
REPORTS, CONSULTATION, VALUATIONS
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CHARLOTTE, NORTH CAROLINA

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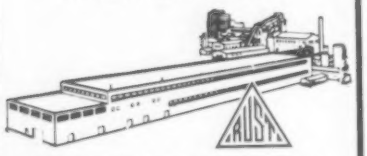
for Economic Growth


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"Paper conditioning the modern way"

BUILT TO OPERATE AT ANY MACHINE SPEED
SYSTEMS ALSO BUILT FOR APPLYING SIZING MATERIALS, STARCHES, WAX EMULSIONS, PLASTICIZERS AND OTHER SURFACE FINISHING SOLUTIONS.
BUILT FOR MANUFACTURING OR CONVERTING PROCESSES
WRITE FOR LITERATURE
VAPO SYSTEMS
132 W. Home Avenue, Villa Park, Illinois

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures
(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Jan. 28	Feb. 4	Feb. 11	Feb. 18	Feb. 25
1961	89.9	91.5r	91.9	88.3r	87.0
	Jan. 30	Feb. 6	Feb. 13	Feb. 20	Feb. 27
1960	96.3	97.8	98.2	98.5	96.5

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.5	97.7	98.1	96.9	97.6	96.1	81.2	91.7	89.1	94.8	92.0	80.2	92.7
1961	87.8‡	89.7R											

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1954	1955	1956	1957	1958	1959	1960	1961
Year to Date	94.3	95.2	100.2	95.5	87.8	89.0	97.1	88.4
Year Average	91.6	96.2	97.9	90.4	87.0	92.2	92.8	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Jan. 28	Feb. 4	Feb. 11	Feb. 18	Feb. 25
1961	90	90	90	87	89
	Jan. 30	Feb. 6	Feb. 13	Feb. 20	Feb. 27
1960	97	96	96	96	91

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	93	94	92	78	94	88	93	86	73	89
1961	88	89											

‡ Preliminary.
† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	WEEK ENDING Feb. 18, 1961	WEEK ENDING Feb. 25, 1961	CUMULATIVE TO DATE Jan. 1, 1961 to February 25, 1961
% Activity	87%	89%	89%
Total	298,124	305,151	2,318,339
Containerboard—Domestic Use	147,481	148,557	1,154,927
Liner	95,305	96,418	761,479
Corrugating Material	46,907	46,912	357,378
Chip & Filler Board	5,269	5,227	36,070
Boxboard—Domestic Use	101,723	103,134	747,046
Folding	60,519	58,057	437,930
Set-Up	10,374	9,470	75,217
Special Food Board	30,830	35,607	233,899
Other Paperboard	48,920	53,460	416,366
Containerboard Type	20,593	23,292	191,652
Boxboard Type	28,327	30,168	224,714
Total Orders			
Received	282,504	314,694	
Unfilled End of Week	389,973	399,320	

Alvin H. Johnson & Co.
INCORPORATED
Consulting and Designing Paper Mill Engineers
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NEW YORK 17, N. Y.
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ESTIMATES AND SURVEYS

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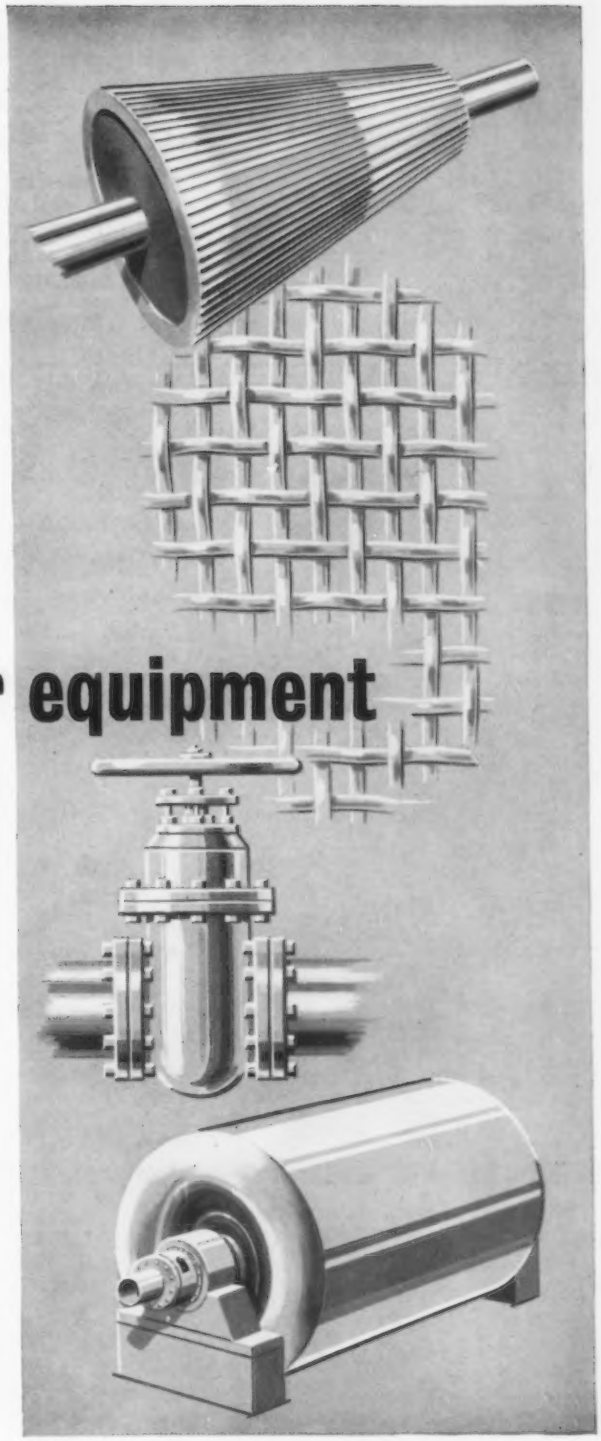
In Making Wet-Strength Papers–

KYMENE® POLYAMIDE RESINS

are kind to your equipment



Why let acid corrosion eat up your paper stock system? Kymene wet-strength resins 557 and 709 function in neutral or alkaline pH systems and do not need corrosive acid conditions to develop their wet-strength characteristics.

See what Kymene polyamide-epichlorohydrin wet-strength resins can do for you. Contact the nearest Hercules Paper Makers Chemical sales office:

Atlanta, Ga. Milwaukee, Wis.
Holyoke, Mass. New Orleans, La.
Kalamazoo, Mich. Portland, Ore.
Wilmington, Del.

Paper Makers Chemical Department

HERCULES POWDER COMPANY

INCORPORATED

Hercules Tower, 910 Market Street, Wilmington 99, Delaware

PP61-3

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Get the Correct Carthage Wastewood Chipper for YOUR Requirements

Carthage 39" Chipper produces maximum percentage of chips to desired length—minimum fines. Available for gravity discharge or blowing in any direction. Horizontal feed spout for easy handling of long pieces.

Change disposal expense to clear profit. Convert your waste slabs, edgings and small rounds to high quality chips. There's an efficient Carthage Wastewood Chipper exactly suited to your needs.

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Please send full information on Carthage wastewood chippers.

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Finding and landing THE ONE BEST JOB requires sound analysis, careful planning, proper contacts and skillful negotiation.

Paper men ourselves, and the only recognized professional specialists in the world in our particular field, we assist responsible paper men to accelerate their careers by uncovering and developing THE SPECIFIC SITUATION that most exactly fits the needs of each individual we serve.

If you seek to better yourself, and your performance to date entitles you to our endorsement, we can and will help you. Contact us in absolute confidence for information regarding procedure.

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PERSONNEL CONSULTANTS TO THE PULP, PAPER & ALLIED INDUSTRIES

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PAPER MILL CHEMIST

Outstanding opportunity for young man with degree in pulp and paper manufacturing. Position will involve general technical responsibilities in a medium sized Michigan mill of a national paper manufacturer. This position will provide right man with chance to move into production management after attaining suitable experience. Send resume and salary requirements to Box 61-48 care Paper Trade Journal. M-13

Immediate position open for Graduate Mechanical Engineer. Prefer man experienced in paper or paper converting. Will accept candidate with machine design experience. Send resume, salary requirements to Rochester Paper Company, Rochester, Michigan. TF

Help Wanted

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Ingenieurbureau für die Beratung der Zellulose- und Papierindustrie, eine Tochtergesellschaft der international tätigen Sandwell-Organisation Vancouver/Kanada, sucht für ihre Büros in Zürich, Schweiz, gut ausgewiesene

INGENIEURE TECHNIKER ZEICHNER

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Geboten werden: vielseitig hochinteressante Arbeit, gut bezahlte Dauerstellen mit Personalversicherung, Fünftagewoche und englische Arbeitszeit.

Offerten mit Lebenslauf, Photo und Zeugnissen sind erbeten an:

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ADMINISTRATIVE ASSISTANT — This is an excellent opportunity for an ambitious, competant man to advance. Most likely this individual will have a degree in Mechanical or Chemical Engineering and presently employed as an Assistant Superintendent or Superintendent between the ages of 25-40 yrs. Please furnish complete resume of experience and education and include recent photo to Box 61-52, c/o Paper Trade Journal. M-20

Medium sized Southern Berkshire paper mill requires a staff electrical engineer with 5 to 7 years general electrical maintenance, design and instrumentation experience. Please send resume and salary requirements to Box 61-42, care Paper Trade Journal.

M-20

WANTED

Engineer for Sales Work at Midwest Headquarters

of one of the best known manufacturers of a product that is used on most all pulp and paper mill machinery.

Require engineering graduate with some paper mill engineering or maintenance experience.

Age 30 to 35, preferably married—not a requisite.

A real opportunity for the right man.

Address box 61-50, Care of PAPER TRADE JOURNAL M-27

FOR SALE

Beaters

6—E. D. Jones Beater Rolls 54" dia. x 48" face, 70 new 304 stainless steel bars

2—Beater Rolls 65" dia. x 54" face, 70 bars

1—Beater Roll 52" dia. x 48" face, 70 bars

2—Beater Rolls 60" dia. x 60" face, 76 bars

1—Beater Roll 54" dia. x 54" face, 66 bars

All the above beater rolls can be fitted with stands and tubs to make you a complete beater in A-1 condition.

Washers

7—Complete Washers, drums size 42" face x 44" dia. with bronze ends, complete raising and lowering mechanism

2—Complete Washers size 55" face x 47" dia. with bronze ends, complete in every respect. These washers are like new and priced to sell.

Beater Pulleys

7—Beater Pulleys 72" dia. x 21" face

2—Beater Pulleys 102" dia. x 23" face

1—Beater Pulley 96" dia. x 21" face

1—Beater Pulley 72" dia. x 18" face

1—Beater Pulley 72" dia. x 30" face

2—Flat Pulleys 52" dia. x 21" face

Jordans

1—Noble & Wood Pony Monarch Jordan, Type D, with new stainless steel bars and wood fillings in A-1 condition

1—Noble & Wood Pony Monarch Jordan with stainless steel fillings

1—E. D. Jones Jordan No. A 315 with stainless steel fillings in plug, bronze in shell

1—Noble & Wood Mammoth Jordan No. W 258 with stainless steel fillings.

2—Emerson Jordans No. 2 with good fillings

3—Noble & Wood Monarch Jordans, fillings to suit

Dryers

35 Dryers 36" dia. x 82" face complete with frames, gears, bearings and rope carriers

30—Dryers 36" dia. x 84" face

5—Dryers (Downington) 36" dia. x 72" face. ASME listed by National B. D. for 50# working pressure at 300°F.

2—Dryers (Rice-Barton) 48" dia. x 152" face

5—Dryers (Bagley & Sewall) 48" dia. x 86" face

1—Yankee Dryer (Beloit) 10' dia. x 132" face

Sheeters and Winders

1—Clark-Aiken duplex precision Cutter, Type H, 165" face sheet length from 25" to 84" with tape delivery to fixed layboy complete with drives, New 1956, "New" guarantee. This complete machine is in A-1 condition

1—Hamblet Sheeter 90" face with Moore & White layboy, backstand and Manco overlay and counter, 4 top and bottom slitters, backstands

1—Hamblet 100" Sheeter and backstand Type 1-8, complete with layboy and drives

1—Hamblet Sheeter 72" face complete with 4 top, 4 bottom slitters, motor and drives, with Maxson automatic layboy

1—Cameron Winder No. 6, 45" face drums complete with slitters

1—Dietz Slitter & Perforator 81" face, for toilet tissue

Reels

1—Black Clawson uniform speed reel 42" x 160" face drum, left hand, with 4 mandrels, 4 Hannifin air cylinders, 2 Hannifin air controls, motor and starters, New in 1956

1—Bagley & Sewall pope type reel 110" face, A.F. bearings. New 1955

1—Rice-Barton pope type automatic change reel complete with water-cooled brakes, anti friction bearings, drum 42" dia. x 110" face

2—90" Bagley & Sewall 2-spool upright reels

1—Two spool 108" Pusey & Jones upright type reel

1—Two spool 76" Sandy Hill upright type reel

WE SPECIALIZE IN MANUFACTURING NEW HORIZONTAL POPE TYPE REELS (No fancy names) JUST A WELL DESIGNED CUSTOM BUILT REEL AT A REALISTIC PRICE.

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M-13

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If you are interested, please write us, giving your complete personal and business history, which will be held in strict confidence.

FORT HOWARD PAPER COMPANY
GREEN BAY, WISCONSIN

M-20

Situations Wanted

Production executive — conversion of boards, paper & film. Well versed in heading up all production functions in an organization; or reorganization deal. Multiple manufacturing units. Employed — wishes change for challenging opportunity. Box No. 61-9 care Paper Trade Journal. M-27

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Twenty five years experience in Paper Mills. Supervising in maintenance and woodroom.
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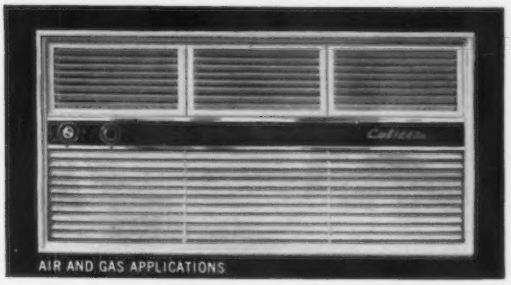

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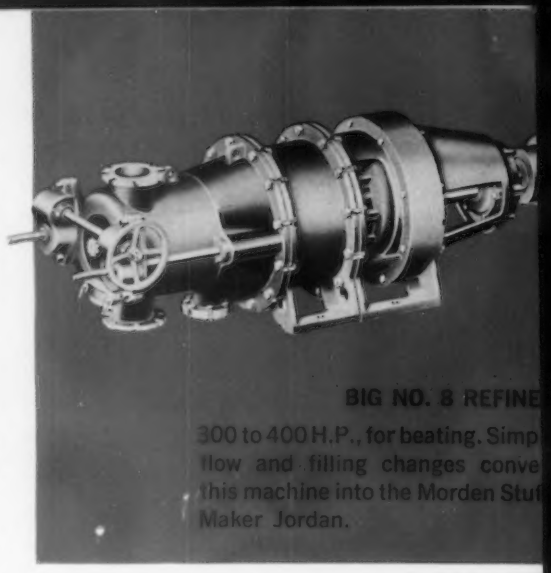
MORDEN BIG NO. 8 REFINER, 300-400 H.P.

The Stock-Maker Refiner's unique reverse-flow cushioning treatment provides good mullen, minimum freeness drop, good tear retention. Morden reverse flow holds a cushion of stock between shell and rotor bars, permitting gentle brushing, combing and fraying of the fibers. Customers report power savings up to 50%. **Detailed information upon request.**



BIG NO. 8 REFINE
300 to 400 H.P., for beating. Simp
flow and filling changes conve
this machine into the Morden Stuf
Maker Jordan.

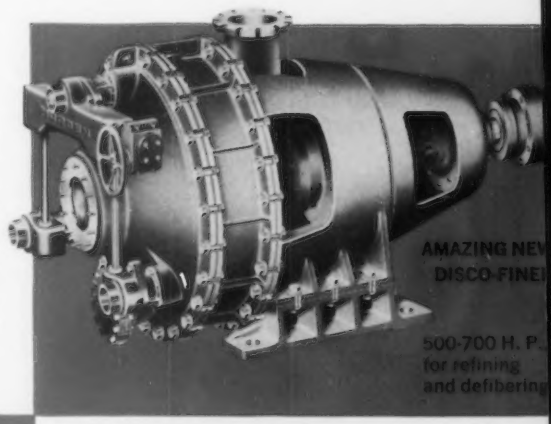
MORDEN STUFF-MAKER JORDAN

The Morden Stuff-Maker for jordaning represents a real technical advance in Jordan engines. In place of conventional rolled bar fillings, Morden provides precision cast, dynamically balanced fillings which require no grinding in. Technically advanced Morden fillings substantially improve treatment, give service far in excess of conventional rolled bar fillings. **Complete information supplied upon request.**

better stock treatment • lower power consumption • greater production • MORDEN accomplishes all three

MORDEN DISCO-FINER, 500-700 H.P.

The most significant new development in stock preparation, the NEW MORDEN DISCO-FINER, provides (a) Tremendous capacity, (b) Low power consumption per ton of production. Simple flow and filling changes adapt the Disco-Finer for defibering or refining. The new self-aligning, semi-conical design of rotor and stator plates overcomes possibility of warpage or deflection. Here, truly, is the answer where large production and high precision treatment are required. **Complete information upon request.**



AMAZING NEW
DISCO-FINE
500-700 H. P.
for refining
and defibering

MORDEN SLUSH-MAKER PULPER

CONTINUOUS OR BATCH OPERATION

Regardless of your pulping requirements, there just is no better answer than the Morden Slush-Maker Pulper. It can be employed on continuous or batch operation. Can be mounted beneath the paper machine to handle dry-end broke on a continuous basis at full machine production. Rapid circulation and the unique Morden brushing action give the most thorough repulping. Even where the job is toughest, where space is limited, the Morden Slush-Maker handles pulp sheets, paper stock, coated and uncoated brokes and completely defibers difficult wet-strength brokes. **Write for full story.**

SLUSH-MAKER PULPER
continuous dry-end pulping.

SLUSH-MAKER
PULPER
batch or continuou
pulping.

MORDEN MACHINES COMPANY

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PORTLAND 1, OREGON
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